

Business Process Reengineering: A Bibliometric Study

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ABSTRACT

Business Process Reengineering (BPR) has become an important research domain for understanding organizational transformation, process improvement, and technology-driven change. This study aims to examine the intellectual structure, research development, influential contributions, and emerging themes in BPR literature through a bibliometric analysis approach. Data were collected from the Scopus database using relevant keywords related to Business Process Reengineering, and the retrieved publications were analyzed using VOSviewer to identify citation patterns, collaboration networks, keyword co-occurrence, thematic evolution, and research density. The findings indicate that BPR research has developed through several major knowledge streams, including process optimization, information systems integration, organizational change, enterprise resource planning, and supply chain management. Citation analysis reveals that influential studies have primarily focused on the relationship between information technology, process redesign, and successful implementation strategies. The keyword analysis demonstrates that BPR has evolved from a traditional efficiency-oriented approach toward a broader transformation framework involving digital technologies, organizational capabilities, and strategic adaptation. Furthermore, collaboration analysis highlights the contribution of leading researchers, institutions, and countries in shaping the development of BPR knowledge. This study contributes by providing a comprehensive overview of BPR research evolution and identifying future research opportunities related to artificial intelligence, automation, Industry 4.0, and digital transformation.

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1. INTRODUCTION

The modern business setting is faced by technological advances, uncertainty in the market, and increased global competition. The organizational structure and business practices need constant review in this modern day setting for an organization to survive and

compete effectively [1], [2]. The processes and management practices that used to work well in the past can become obsolete when faced by the challenges of the modern era. This implies that strategic approaches should be adopted by organizations to ensure efficiency, flexibility, and sustainable competitive

advantage. The approach that has become most influential in addressing these issues is the Business Process Reengineering (BPR). This process entails the profound change and redesign of business processes to ensure significant improvement in cost, quality, service, and speed [3].

Since its advent in the early 1990s, Business Process Reengineering has been an important notion in the literature of operations management, information systems, and organization change. BPR defined it in terms of addressing the deficiencies of traditional process improvement approaches. Organizations should not only automate the ineffective processes but think over how the work should be done. This approach has shifted the focus from the functional view towards the process one in which activities are connected beyond organizational boundaries in order to generate additional customer value. Other researches have developed the theory further by identifying such factors as information technology, organizational structure, human resources, and strategic alignment affecting the success of BPR projects [4]–[6].

With the advent of digital transformation, the relevance of BPR in modern-day organizations has been enhanced even more. Technologies like artificial intelligence, cloud computing, big data analytics, robotic process automation, and enterprise information systems have given rise to new opportunities whereby organizations can redesign their processes for better performance. Not only are digital technologies means of automating processes, but they are also drivers through which organizations can design business models innovatively and restructure mechanisms of value creation [7], [8]. As a result, various research works have focused on exploring the relationship between BPR and digital transformation, showing how the process redesign can help organizations become agile and digitally mature [9]–[11].

However, notwithstanding its significant role in the strategy of the company, the implementation of BPR is complicated and poses numerous difficulties. Prior studies

have shown that many BPR programs do not succeed because of a lack of organizational readiness, organizational resistance to changes, the lack of top-management commitment, and poor integration of technology implementation and business strategy [12], [13]. Consequently, a BPR process is a combination not only of investments into technologies but also of change management, employees' participation, knowledge management, and strategic governance. The complexity of BPR implementation has led to an investigation of a variety of aspects, such as organizational capability, innovation management, information systems, supply chain management, and public sector transformation.

In view of the extensive body of research in the area of Business Process Reengineering that has emerged in recent decades, it is crucial to have a comprehensive overview of the knowledge structure, trends, major contributors, and future research opportunities in the area. Bibliometrics represents the proper methodology for the objective study of large numbers of scientific publications within the particular research area, including the patterns of publication activity, citation, collaboration and thematic trends [14]. Different from traditional literature reviews which typically emphasize the qualitative analysis of selected works, bibliometric analysis allows identifying the trajectories of knowledge evolution and revealing connections between research themes based on quantitative analysis. Earlier bibliometric analysis has been successfully employed in the area of management, information systems, and technology, etc., in order to identify the trajectories of research and new emerging areas.

While Business Process Reengineering has been the subject of numerous academic studies, there is an evident lack of integration of the literature in various disciplines such as management, information systems, operations, and digitalization. The multiplicity of research angles poses difficulties for tracing intellectual progress within the area of BPR

research, establishing research streams, identifying important articles and researchers, and defining possible research areas. Moreover, the existing reviews mostly concentrate on particular aspects of BPR implementation without addressing the problem of the entire state of research in the world. Thus, a systematic bibliometric analysis should be performed.

The objective of this study is to carry out an all-encompassing bibliometric analysis of BPR by exploring publications, citations, key players, countries, journals, and intellectual structure in BPR literature. In addition, this study attempts to uncover research topics, emerging issues, and potential research avenues for further investigation in the area that may aid in advancing knowledge in BPR. The systematic review of existing literature is anticipated to help advance the understanding of the evolution of BPR and to offer relevant resources for scholars and practitioners in the area.

2. METHODS

The present research uses a bibliometric analysis methodology for the systematic study of the emergence and intellectual structure of studies on Business Process Reengineering (BPR). Bibliometric analysis refers to a quantitative approach to researching scientific publications using statistics and visualizations in order to detect trends in publications, important papers, collaboration and emerging themes of research in a particular field [14]. This approach was chosen due to the fact that BPR studies have evolved in several disciplines, such as management, information systems, operations management, and digital transformation, which makes the literature in

this field diverse and rich enough for a systematic mapping.

The process of collecting data was performed by using the Scopus database, which serves as the main source of scientific literature and provides a wide range of peer-reviewed articles and high-quality scientific material. The keyword combination, which is associated with Business Process Reengineering, was used as the basis for developing the search strategy. Such keywords included "business process reengineering," "business process redesign," and "process transformation." The selection of publications was conducted based on their relevance within the database, whereas document type, subject area, and publication year were taken into account in order to select only the relevant and high-quality dataset. After that, the duplicates and irrelevant publications were eliminated through the process of screening the titles, abstracts, and keywords.

The analysis was done through various bibliometric visualization methods, in particular the use of VOSviewer. The following analytical methods have been used, such as trend analysis of publications, citation analysis, co-authorship analysis, keyword co-occurrence analysis, and bibliographic coupling. The citation analysis method was utilized to discover the important publications and intellectual contributions, whereas the co-authorship analysis analyzed the collaborations of researchers and countries. In addition, the keyword co-occurrence analysis was performed to determine the main research areas and emerging areas of research related to BPR. This paper presents a complete picture of the historical development, present research field, and future directions of research on Business Process Reengineering.

3. RESULTS AND DISCUSSION

3.1 Co-Authorship Analysis

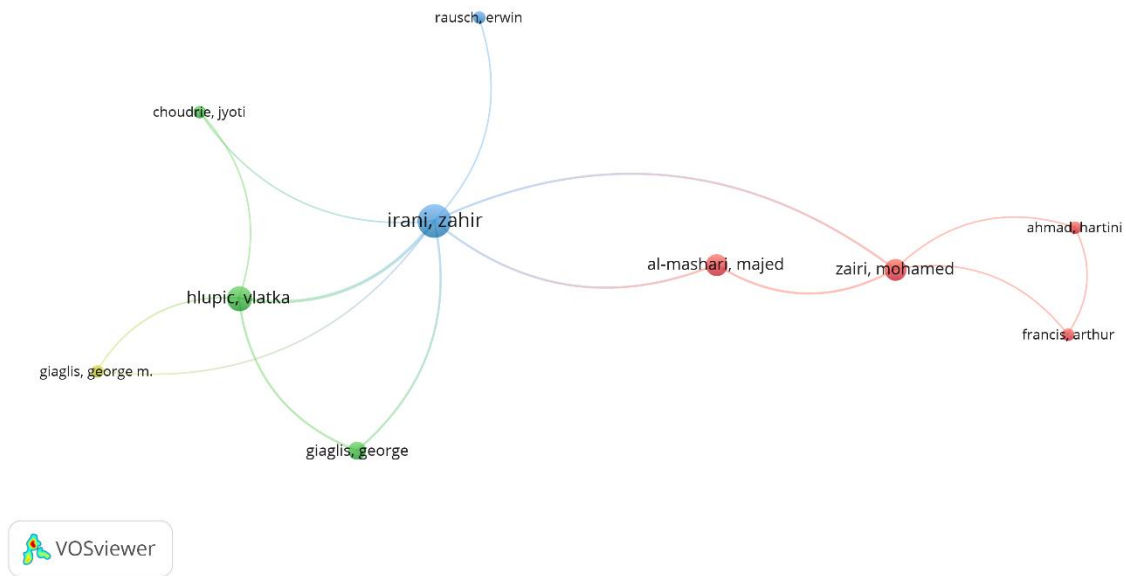


Figure 1. Author Visualization

Source: Data Analysis

Figure 1 shows the collaboration network in the field of Business Process Reengineering (BPR). The network shows a moderately fragmented yet highly interconnected community of researchers, including a few clusters of collaborations. Zahir Irani is seen to be the most visible and central author of the network, based on the size of the node and his connection with other researchers, implying that he has played an important role as an influencer in the BPR research area. He collaborates with

researchers such as H. Lupic, M. Giaglis, and E. Rausch, making up a cluster of researchers working in the realm of process transformation, information systems, and organizational change. There is another collaboration cluster of researchers, led by Mohamed Zairi and collaborating with M. Al-Mashari, Hartini Ahmad, and Arthur Francis, which implies research activities on the implementation of BPR, strategic management, and operational improvement.

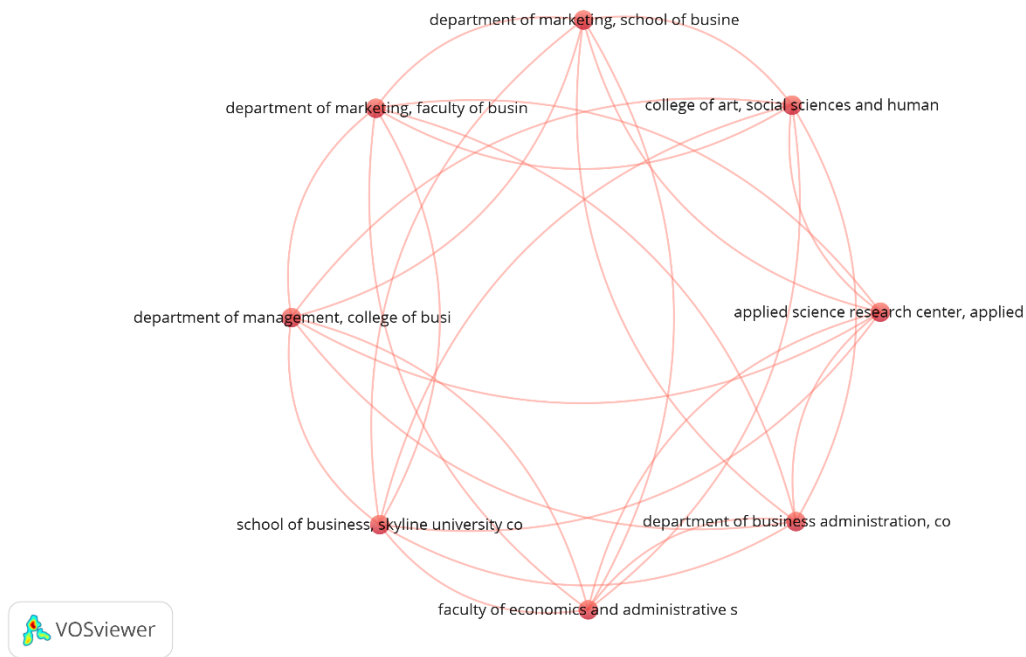


Figure 2. Institution Visualization

Source: Data Analysis

As depicted in Figure 2, the relationships of the collaborating organizations for BPR research are shown. From the network analysis, it is evident that there are many connected organizations where several departments, faculties, and research centers collaborate on BPR research through joint publications. Since there are no multiple clusters present in the network, it indicates that BPR research is an integrated institutional partnership rather than individual research group activities. Some of the prominent institutions involved in BPR research include Department of Management,

College of Business, Department of Marketing, School of Business, and Faculty of Economics and Administrative Sciences. The fact that these institutions form central nodes within the network clearly indicates the significant contribution of these institutions to BPR research. The connections between various business schools, applied science research centers, and social science faculties suggest that the BPR research is interdisciplinary in nature because it involves management, information system, organizational and applied science disciplines.

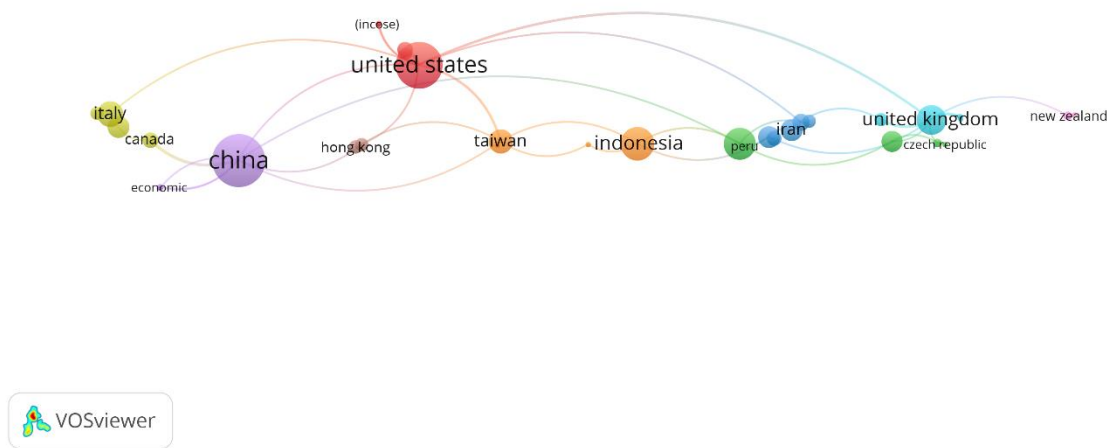


Figure 3. Country Visualization

Source: Data Analysis

Figure 3 presents the world map and collaboration networks for BPR research. The map shows that research on BPR has been carried out in many different regions in the world, with some countries becoming key research partners and collaborators. The United States and China stand out as the most visible nodes due to their large node size, which means they are the most productive and influential in the field. The United States is well-connected to many other countries including China, Taiwan, Indonesia, Peru, Iran, and the United Kingdom, and acts as an important hub connecting different countries through their BPR research collaboration. China itself has become an important research community and has connected with countries

like the United States, Canada, Italy, and Hong Kong.

Furthermore, the network showcases the growing scope of BPR studies to the developing nations like Indonesia, Peru, Iran, and Czech Republic. The existence of the nation named Indonesia in the network suggests that there is growing interest from the academia to conduct researches on BPR in developing countries regarding issues like digitalization, organizational effectiveness, and use of information systems. Moreover, collaboration links amongst the European and Asian countries show that BPR has transformed itself into a global research field rather than remaining confined to its initial western management environment.

3.2 Keyword Co-Occurrence Analysis

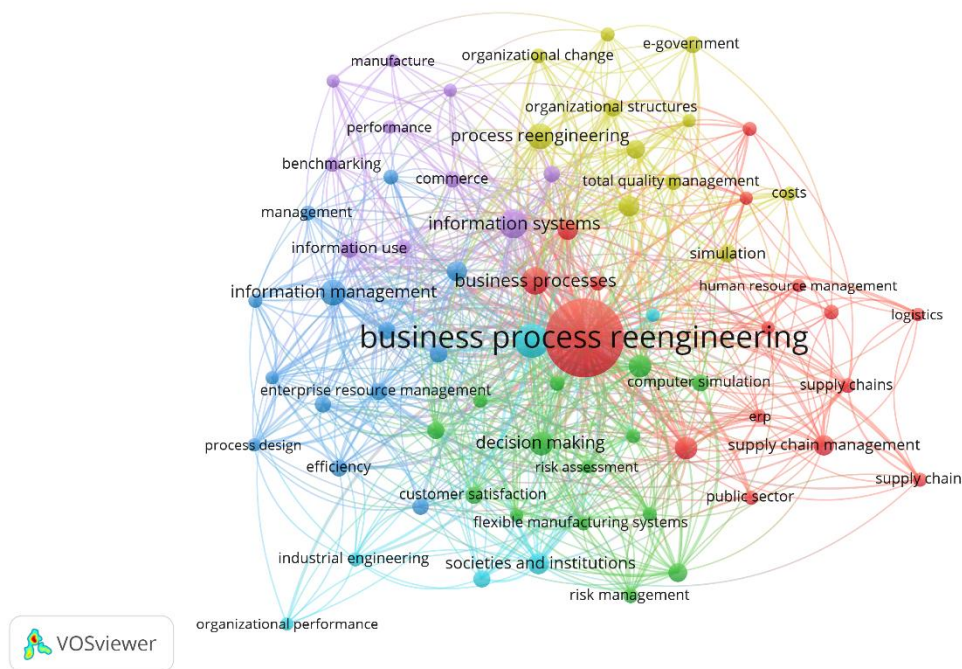


Figure 4. Network Visualization

Source: Data Analysis

Figure 4 shows the intellectual structure and the thematic links within the BPR research domain. The larger size of the nodes reflects the frequencies of the keyword co-occurrences, whereas the lines show the strengths of the co-occurrence links between the keywords. The keyword “business process reengineering” is shown as the largest and most central node, reflecting its dominance in terms of being the core concept of the research field. The strong links of the keyword to concepts like “information systems,” “business processes,” “process reengineering,” and “information management” reflect the historical link between BPR research and the process redesign using technology and management. The blue cluster is one of the major research streams that focus on information technology, information management, and enterprise systems. The use of terms such as “information management,” “information use,” “enterprise resource management,” “process design,” and “efficiency” implies that the early and later BPR studies consider the importance of information systems in facilitating organizational change. The blue

cluster captures the view that effective business process redesign demands the integration of digital technologies and enterprise systems.

The red cluster indicates the association between BPR and operations management, logistics, and organizational performance enhancement. The key words like “supply chain management,” “logistics,” “ERP,” “human resource management,” “costs,” and “total quality management” indicate that the scope of research on BPR has been broadened from internal process reengineering to organizational and supply chain optimization. This cluster shows that BPR is often studied in terms of strategic management in order to cut costs, coordinate efforts, improve quality, and gain competitive advantage. The green and yellow clusters are made up of emerging and complementary themes concerning organizational transformation, decision making, and governance. The green cluster comprises of the words “decision making,” “risk management,” “computer simulation,” and “flexible manufacturing systems.” This shows that more emphasis is being put on the use of

analysis and decision-making support during the BPR process. On the other hand, the yellow cluster contains the words “organizational change,” “organizational structures,” “e-government,” and “total quality management.”

The keyword network reveals that BPR research has gradually developed from its conventional orientation to process redesign and efficiency improvement into an interdisciplinary area that comprises digital transformation, information systems, supply

chain integration, organizational change, and strategic management. It can be seen that due to the high level of interconnection between clusters, BPR is researched not as an operational tool but rather as an integrated transformative approach incorporating technology, management, and organization views. In future, the research can be directed towards the integration of BPR with new technologies such as AI, robotic process automation, Industry 4.0, and digital platforms.

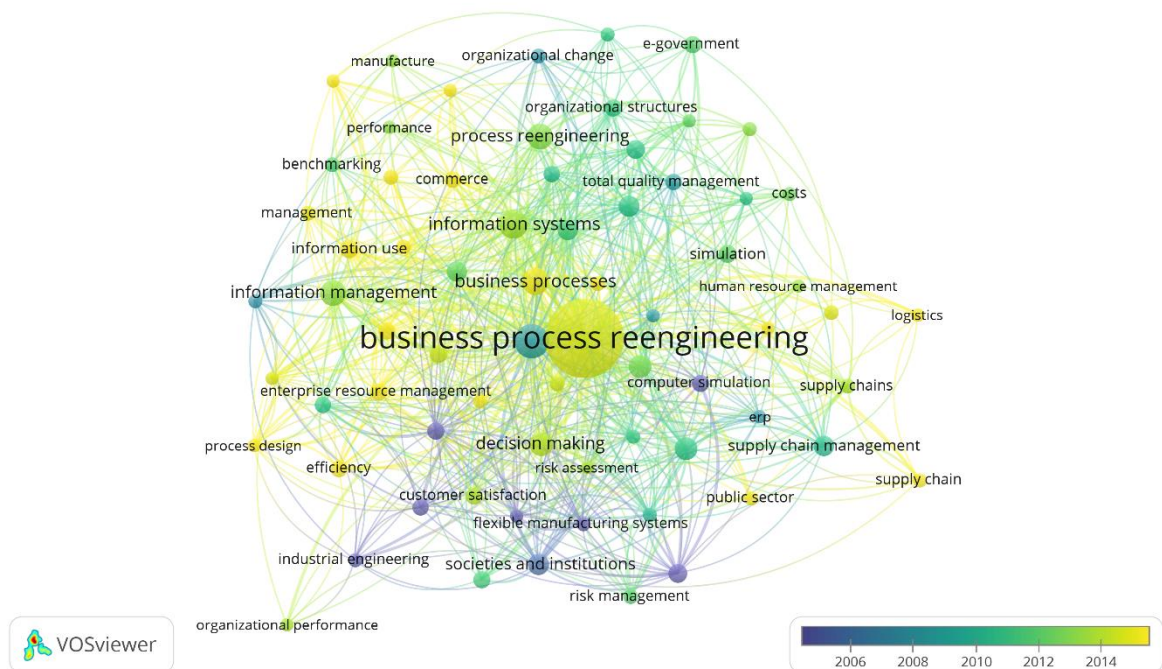


Figure 5. Overlay Visualization

Source: Data Analysis.

Figure 5 illustrates the temporal development and evolution of research themes in the field of Business Process Reengineering (BPR). The color gradient represents the average publication year of keywords, where darker blue and purple indicate earlier research topics, while green and yellow represent more recent developments. The visualization shows that “business process reengineering” remains the central and most frequently discussed keyword, acting as a connecting point among various research themes. Its strong relationship with keywords such as “information systems,” “business processes,”

“information management,” and “process reengineering” confirms that the foundation of BPR research has been strongly associated with organizational process redesign and the adoption of information technology.

As regards the earlier research themes depicted by the blue and purple nodes, they largely pertain to the fundamental concepts of BPR, such as information management, ERP, industrial engineering, risk management, and organizational performance. The identified themes are characteristic of the first stage of development of BPR research, which initially concentrated on efficiency improvement and workflow

redesign, as well as on the use of information systems in ensuring organizational efficiency. Concepts of process design, efficiency, and enterprise resource management indicate that the early BPR literature had a pronounced internal orientation.

The latest trends in research, which are symbolized by green and yellow dots, show a move towards more general organizational issues and strategic topics in the field of BPR research. Some of the latest topics include organizational change, organizational structure, e-government,

supply chain management, decision making, simulation, and total quality management. It can be assumed that contemporary BPR research pays more attention to the implementation of the transformations, which means that today, BPR is not only about the technology but also about how this technology is implemented and integrated within the organization. Future research will probably concentrate on the intersection between BPR and the modern digital technologies like AI, automation, and Industry 4.0.

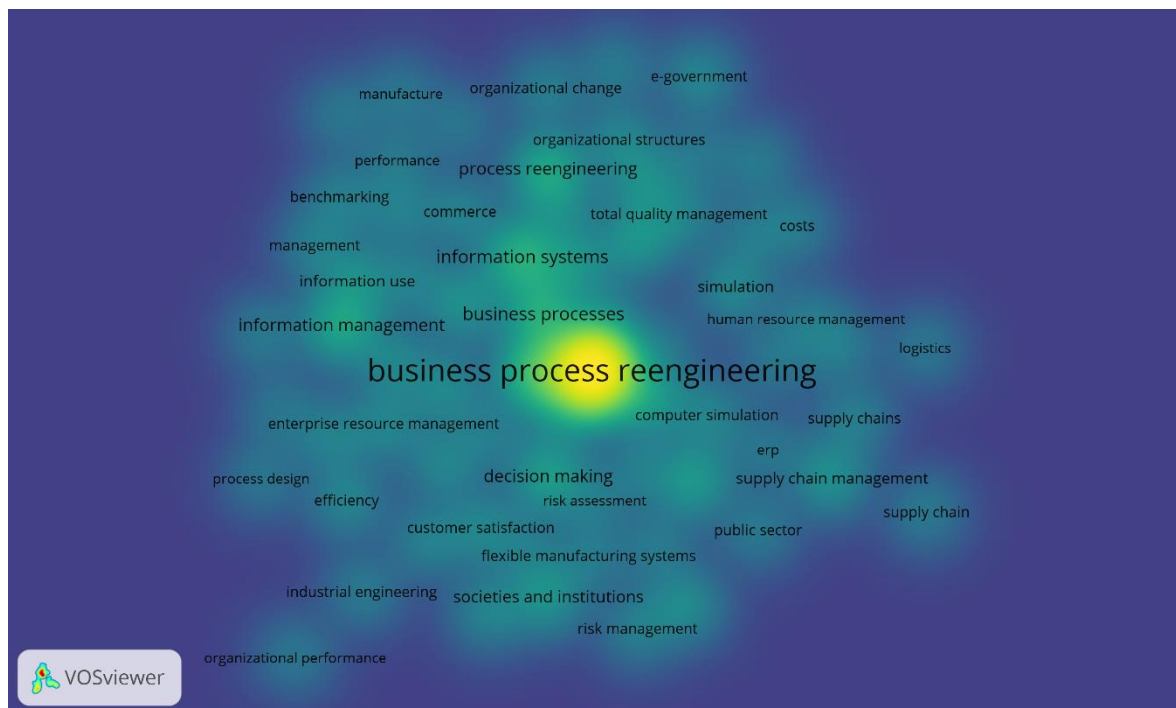


Figure 6. Density Visualization

Source: Data Analysis

Figure 6 displays the density and intensity of the researched topics in the domain of Business Process Reengineering (BPR). In this representation, the zones colored more brightly correspond to the keywords that occur more often and attract greater research interest, whereas zones with darker colors indicate less researched topics. The most brightly colored zone is associated with the keyword “business process reengineering.” This corresponds to the dominant topic of the field of research. High-density zones connected with the central one include “business processes,” “information

systems,” “information management,” and “process reengineering.” This implies that the traditional approach to BPR research has been oriented toward the redesign of business processes using information technologies.

The chart also indicates a number of other themes of research which support the central idea of BPR. Areas with high density in the fields of enterprise resource management, supply chain management, decision-making, organizational change, total quality management, and organizational structures indicate that BPR has become a multidisciplinary area including

technological, operational, and managerial aspects. In turn, areas with low density like e-government, risk management, flexible

manufacturing system, and organizational performance may be considered as possible themes for further investigation.

3.3 Citation Analysis

Table 1. Top Cited Literature

Citations	Authors and Year	Title
251	[15]	Business Process Analysis and Optimization: Beyond Reengineering
240	[16]	Exploring the relationship between information technology and business process reengineering
230	[17]	Transformational change and business process reengineering (BPR): Lessons from the British and Dutch public sector
134	[18]	Business process reengineering: A survey of international experience
127	[19]	Modelling and analysis of business process reengineering
120	[20]	Assessing readiness for business process reengineering
115	[21]	Business process reengineering: Critical success factors in higher education
112	[22]	Business process reengineering in the public sector: The case of the housing development board in Singapore
111	[23]	Business process reengineering of a supply chain and a traceability system: A case study
95	[24]	Implementing enterprise resource planning systems with total quality control and business process reengineering survey results

Source: Scopus 2026

Table 1 shows the most cited literature in the field of Business Process Reengineering (BPR). These papers represent some of the most impactful scholarly work that has contributed significantly to the growth of this research area. The most cited paper in this field is [15] entitled "Business Process Analysis and Optimization: Beyond Reengineering" with 251 citations. It shows that this work made considerable contribution to advancing BPR beyond the process redesign stage into analytical and optimization phase. Following this is [16] with 240 citations. This study highlights the strategic link between IT and BPR. [25] is another example of highly cited paper that examines transformational change and BPR implementation in the public sector. Meanwhile, [26] provides an extensive overview of international BPR practices. Among the other highly cited papers are those focusing on various implementation issues, such as BPR modeling and analysis, organizational readiness, critical success

factors, public sector transformation, supply chain reengineering, and integration with ERP and TQM.

Discussion

The results of the current bibliometric analysis suggest that the field of Business Process Reengineering (BPR) can be considered as multidisciplinary research incorporating perspectives of process management, information systems, organizational change and transformation, and strategic management. The results of the publication and citation analysis show that initial BPR research has been highly affected by the desire to enhance organizational effectiveness through process redesign. Most cited works highlight that BPR is not just an operational method but also a managerial one which presupposes alignment of the business processes, information technologies, and organizations themselves. It proves the significance of such keywords as business processes, information systems, information

management, and process reengineering as technological foundations have played the key role in the development of BPR research.

The evolution of theme that is discovered in keyword analysis and overlay analysis shows how BPR research changes from process optimization to organizational transformation. In older papers, there was the emphasis on such topics as process design and improvement, ERP, and information management. However, nowadays BPR research deals with such topics as organizational change, supply chain management, decision-making, e-government, and digital transformation. It seems like BPR is becoming appropriate to the new business environment, where companies need agility and flexibility to survive. Moreover, the growing interrelation of BPR with such disciplines as simulation, risk management, total quality management, and supply chain management show that modern BPR research addresses complicated challenges of organizational transformation, not process improvement.

The patterns of collaboration and citations also prove that the development of BPR knowledge was impacted by key scholars, institutions, and countries which developed the theoretical and practical bases of the subject. The predominance of scholars from the USA, China, and Europe proves the diffusion of BPR concepts across the globe; the appearance of the contributions made by scholars from developing countries proves the increasing interest to the implementation of BPR in various institutional and technological environments. Even with intensive development of research, the network of collaboration still demonstrates certain concentration on several leading academic communities, thus allowing for further collaboration at the international and interdisciplinary level. Further research in the

sphere of BPR must include such areas as the influence of emerging technologies, namely artificial intelligence, robotic process automation, Industry 4.0, and digital platforms on the processes of process redesign.

4. CONCLUSION

The bibliometric analysis presented here offers a broad picture about the development of intellectual structure, trends, and knowledge in the field of Business Process Reengineering (BPR). According to the results, BPR has evolved from its basic concern regarding process improvement and efficiency into the research area that deals with information systems, organizational change, digital transformation, supply chain management, and strategic management. Through the citation analysis it is clear that seminal articles have laid the foundations of three basic perspectives of BPR: technology enabled process improvement, organizational transformation, and successful implementation methods. In addition, the bibliometric mapping has shown that information systems and business processes are key topics in the field, whereas topics like digital transformation, automation, simulation, and organizational flexibility can be viewed as future research areas in the field. Even though the development of BPR has been based on the contribution of eminent scholars, universities, and countries, there are many possibilities for enhancing international cooperation and applying BPR to different organizational and technological environments. The future research should investigate how new technologies such as artificial intelligence, robotic process automation, and Industry 4.0 influence the practice of BPR and organizational transformation.

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