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Business Process Reengineering Evolution and Business Model Integration Using a Systematic Review

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ABSTRACT

This study systematically examines the evolution of Business Process Reengineering (BPR) research and its integration with business model innovation from 2015 to 2025. It aims to analyze how BPR supports organizational transformation, strengthens digital capabilities, and creates value through business model operationalization. **A Systematic Literature Review (SLR)** was conducted on 197 peer-reviewed articles indexed in Scopus using the keywords "business process reengineering", "business process", "reengineering" and "business model". The review followed the PRISMA framework, while Biblioshiny and VOSviewer were employed for bibliometric analysis and visualization. **The findings reveal four stages** in the evolution of BPR research. The first stage (2015–2017) emphasized information technology integration and project management to improve process efficiency. The second stage (2018–2020) focused on technology-driven applications, including the Internet of Things (IoT) and supply chain optimization. The third stage (2021–2022) highlighted blockchain, digital twins, and sector-specific innovations in public services and banking. The latest stage (2023–2025) is characterized by AI and machine learning-enabled BPR, supporting intelligent process redesign and customer-centric transformation within the Industry 4.0 context. **This study contributes** by systematically linking BPR evolution with business model operationalization frameworks, including SDBMOM, ARPM, and the Compass Method, demonstrating how process transformation drives strategic value creation. **The findings also show** BPR's contribution to the UN Sustainable Development Goals (SDGs) 8, 9, and 12 through enhanced productivity, innovation, and sustainable production. Future research should examine long-term organizational impacts and cross-sector implementation of AI-enabled BPR.

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1. INTRODUCTION

The significance of a business model to an organization's performance is in its capacity to function as a holistic framework that delineates how the firm generates, provides, and retains value. It serves as a framework for structuring the firm's operations to satisfy consumer requirements while maintaining profitability. A well-managed business model not only supports operational resources with market demands but also drives

innovation and competitive advantage [1]. As businesses function in progressively complicated environments driven by globalization and technological improvements, having a business model that is adaptable and innovative is critical for continuing success. One of the fundamental roles of the business model is its capacity to organize and leverage the internal and external resources of the firm effectively. A business model serves as the conduit through which a firm's resources and capabilities are structured to deliver value to customers. A business model is crucial in guaranteeing the efficient coordination of activities that lead to value creation and delivery. In this sense, the business model acts as a strategic tool that enables the firm to align its operations with market opportunities, thereby enhancing organizational performance [2]. In addition, innovative business models are very important in turning innovations into marketable products or services. Even the most advanced technology can fail to maximize distributed value if it is not supported by an effective business model [3]. Furthermore, business models are essential for creating and maintaining a competitive advantage. The business model reflects the company's realized strategy and serves as a roadmap for how the company operates to create value for stakeholders. This concept is closely related to the Resource-Based View (RBV), emphasizing that an organization's competitive advantage is originated from its unique resources and capabilities. A strong business model combines these resources in a way that creates a sustainable advantage over competitors, allowing the company to differentiate itself in the market and maintain profitability in the long term [4].

According to BPR theory, it is possible to increase the operational efficiency, structural adaptability, and process efficiency of a social enterprise to enhance its performance. The concept of BPR aims to significantly enhance critical performance metrics, including cost, quality, and time. BPR could prove useful to social enterprises seeking financial and social objectives in equal measure by providing a template through which their operational practices can be reengineered to contribute towards their mission-based goals. For example, a researcher points out that institutional leadership and organizational adaptability are important factors when implementing BPR, particularly in microfinance institutions based in developing nations. The current scenario demonstrates that while enhancing operational efficiency, BPR also enhances leadership and flexibility in the quest for social objectives [5].

However, the empirical studies pertaining to the efficacy of BPR within these specific contexts remain scarce, underscoring the imperative for additional inquiry into its enduring effects on both financial viability and societal transformation [6]. The confluence of business model innovation and BPR has the potential to generate a synergistic framework that not only optimizes operational processes but also harmonizes them with the overarching objective of fostering social impact. Research addressing these issues within the Indonesian contexts has yet to be identified. This existing gap provides a pertinent opportunity for forthcoming investigations to explore how BPR can be customized to address the distinctive challenges encountered by organizations in Indonesia, ultimately facilitating the development of a more sustainable and socially accountable business paradigm. This could encompass the analysis of localized case studies, active engagement with relevant stakeholders, and the evaluation of the efficacy of prevailing frameworks in advancing both economic development and social equity [7].

BPR plays a vital role in business model regeneration by enabling organizations to redesign core processes, improve efficiency, reduce costs, and enhance customer value, competitiveness, and innovation [8–10]. As a strategic approach, BPR supports sustainable competitive advantage by aligning organizational processes with technological and market changes [11]. This review adopts a framework integrating BPR, digital transformation, and business model innovation, grounded in resource-based and dynamic capabilities theories [1, 12–14]. Digital transformation reshapes value creation through digital technologies, while business model innovation leverages these capabilities to develop new business models [15–17]. Accordingly, this systematic review synthesizes recent BPR research to explain its role in organizational transformation and business model innovation, providing theoretical and practical insights for successful digital transformation initiatives [18, 19].

2. LITERATURE REVIEW

2.1. Business Process Reengineering

BPR is a strategic management approach that focuses on the fundamental redesign of business processes to achieve significant improvements in organizational performance, including cost, quality, service, and operational efficiency. Traditionally, BPR emphasized eliminating redundant activities and restructuring workflows to enhance productivity. However, recent studies indicate that BPR has evolved beyond operational optimization into a key enabler of digital transformation, organizational agility, and business model innovation.

Consequently, contemporary BPR integrates advanced digital technologies and organizational capabilities to support sustainable competitive advantage and long-term value creation.

2.2. Evolution of Business Process Reengineering

The evolution of BPR has accelerated considerably over the past decade alongside rapid technological advancements. A systematic literature review covering 197 Scopus-indexed publications from 2015 to 2025 identifies four major phases of BPR development. During the first phase (2015–2017), research primarily focused on Enterprise Resource Planning (ERP), information systems, and project management to improve operational efficiency [10]. The second phase (2018–2020) introduced digital technologies such as cloud computing, the Internet of Things (IoT), and supply chain integration, enabling greater organizational agility and cross-functional coordination [20]. In the third phase (2021–2022), blockchain technology and digital twins emerged as important tools for enhancing transparency, traceability, and predictive process management. Finally, the fourth phase (2023–2025) has been characterized by the integration of Artificial Intelligence (AI), Machine Learning (ML), Robotic Process Automation (RPA), and cognitive analytics, shifting BPR from process optimization toward intelligent automation and data-driven decision making. This evolution demonstrates that BPR has transformed into a strategic capability supporting Industry 4.0 and digital transformation initiatives.

2.3. Business Process Reengineering and Business Model Innovation

Recent literature highlights the close relationship between BPR and business model innovation. Rather than functioning solely as an operational improvement methodology, BPR has become an important mechanism for translating business model designs into effective operational processes. Several frameworks, including the Activity Resource Process Model (ARPM), Sustainable Digital Business Model Operationalization Method (SDBMOM), and Compass Method, have been developed to align business strategies, organizational resources, and process architectures. Through these frameworks, organizations can operationalize value creation, improve resource allocation, and enhance organizational adaptability in increasingly dynamic business environments. As a result, BPR serves as a bridge between strategic business model design and operational execution.

2.4. Digital Technologies in Business Process Reengineering

The success of modern BPR implementation is increasingly dependent on digital technologies. Studies consistently demonstrate that the integration of AI, IoT, blockchain, cloud computing, enterprise architecture, and process mining significantly improves process efficiency, decision quality, organizational flexibility, and customer value. These technologies enable intelligent automation, real-time monitoring, predictive analytics, and continuous process improvement. Consequently, digital-enabled BPR has become a strategic capability that supports organizational resilience, enhances innovation performance, and facilitates sustainable digital transformation across industries.

3. RESEARCH METHOD

This study employs a systematic literature approach, selecting peer-reviewed articles from 2015 onwards that concentrate on BPR, digital transformation, leadership, and organizational change in SMEs and VOEs. Analytical frameworks include thematic synthesis and conceptual mapping to organize findings regarding leadership roles, process reform, and the operationalization of business models [21]. The Scopus database was used since its reputation and reliability. The search methodology was managed around primary keywords such as “business process reengineering”, “reengineering”, “business process re-engineering”, “process engineering”, and “business process”. To enable a comprehensive review, the chosen full-text articles from Scopus were examined utilizing the PRISMA framework, encompassing the stages of identification, screening, eligibility, and final selection [22]. Biblioshiny and VOSviewer were utilized for feasibility visualization, whereas Mendeley Reference Manager was employed for organizing the meta-analysis feasibility [23]. The inclusion and exclusion criteria were carefully defined and used during this process.

3.1. Eligibility Screening and Assesment

Through meticulous preparation in Scopus database, publications were classified under the topics of “business process reengineering”, “reengineering”, “business process re-engineering”, “process engineering”, and “business process” from 2015 to 2025. In addition, to gain the connection between business model and business process reengineering, the search strategy was also included keywords “business model” AND

"business process reengineering". Total 199 articles were selected from the search strategy with a combined 3,134 citations from 2015 to 2025. To conduct data management and analysis, the database from Scopus were then transferred to Mendeley Reference Manager to get RIS format and visualized using VOSviewer and Biblioshiny.

3.2. Inclusion and Exclusion Criteria for SLR Article Selection

The SLR utilized five primary processes to enhance literature selection. Enumerates the criteria employed for the selection of SLR articles. This encompasses solely full-text, peer-reviewed publications published from 2015 to 2025, concentrating on business process reengineering, sourced entirely from the Scopus database to ensure quality and relevance.

Table 1. Inclusion and Exclusion Criteria for Article Selection

	Inclusion	**Exclusion**
Language	English	Other than English
Source and document type	Journal Article	Conference proceedings, Book, Book Series, Trade Journal, and Report
Publication stage	Published article from 2015 to 2025	Article in press
Keywords	Business process reengineering, Reengineering, Business process re-engineering, Business Process, Process engineering	Other keywords
Application	Scopus.com, Publish or Perish 8, Mendeley Reference Manager, VOSviewer, Biblioshiny	Other applications

Table 1 presents the inclusion and exclusion criteria applied during the article selection process to ensure the relevance, quality, and consistency of the literature included in this systematic review. The inclusion criteria focused on peer-reviewed journal articles indexed in Scopus, published between 2015 and 2025, and directly related to BPR, digital transformation, and business model innovation. To support a systematic bibliometric and literature analysis, only four software applications were employed, namely Publish or Perish 8, Mendeley Reference Manager, Biblioshiny, and VOSviewer. Conversely, the exclusion criteria removed publications that did not meet the predefined standards, including conference proceedings, books, book series, trade journals, reports, studies published before 2015, non-Scopus-indexed documents, and articles unrelated to the selected analytical tools or research objectives. Applying these criteria through a structured and transparent screening process ensured that only recent, high-quality, and thematically relevant studies were retained, thereby improving the reliability, rigor, and validity of the findings presented in this review [24]

3.3. PRISMA Analysis

The search methodology was organized to ensure consistency and replicability in discovering relevant studies, employing the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework for inclusion and exclusion criteria, as seen in Figure 1. A systematic literature review (SLR) was conducted, utilizing Scopus as the primary database and limiting studies to the years 2015 to 2025. Keywords included "Business process reengineering", "Reengineering", "Business process re-engineering", "Business process", "Process engineering". The PRISMA framework facilitated the selection, filtering, and refinement of studies, while citation management was aided by Publish or Perish 8, which assisted in identifying highly cited and pertinent research within the designated categories [7]. The preliminary search conducted in the Scopus database identified a large number of potentially relevant publications. After the initial screening, 8 articles that were not relevant to the research topic and 1 duplicate publication were excluded, resulting in 618 articles for further evaluation. These records then underwent additional screening based on their relevance to the study objectives, publication eligibility, and the availability of full-text documents. Following this rigorous selection process, a total of 197 articles met all inclusion criteria and were retained for the systematic review. The selected studies were exported in RIS format and managed using Mendeley to ensure accurate reference

organization and facilitate a comprehensive analysis of the development and application of Business Process Reengineering (BPR).

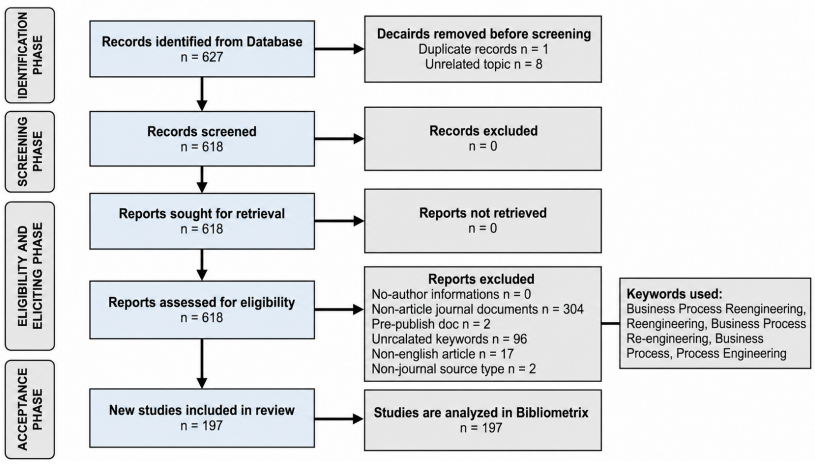


Figure 1. PRISMA Analysis in Literature Selection

In addition to the PRISMA analysis in literature selection, another search was also conducted to search articles related to the connection of business model and business process reengineering without any publication year limitation due to the limited number of articles. The search strategy is using keywords "Business Model" AND "Business Process Reengineering". Total 9 final articles were selected and analyzed manually due to the limited number of articles.

4. RESULT AND DISCUSSION

4.1. Trend Topics of Business Process Reengineering Research from 2015-2025

A total of 197 were selected based on Scopus database, screened based on certain topics and keywords. Figure 2 illustrates four phases of BPR developments [25]. The first phase starts from 2015-2017. Initially, the prevailing subjects included information systems, project management, and business process reengineering. Research highlighted the theoretical underpinnings of Business Process Reengineering (BPR), concentrating on management information systems and project management to facilitate organizational transformation [26].

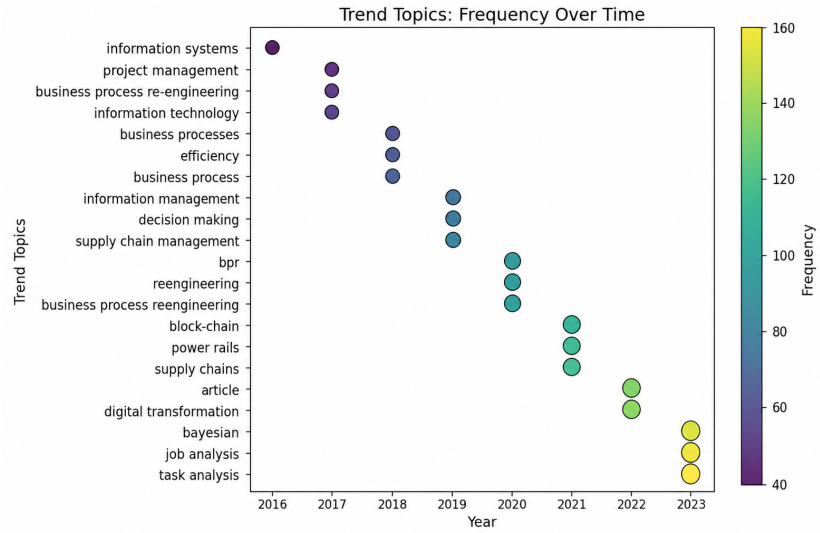


Figure 2. Visualization of Trend Topics from 2015-2025 using Biblioshiny

Initial research emphasized the influence of Business Process Reengineering (BPR) on the efficacy of Enterprise Resource Planning (ERP) systems and employee performance via enhanced process design [25].

Additional studies associated BPR with IT-driven organizational transformation [26]. A research gap in this phase was the absence of integration with disruptive technologies such as AI, blockchain, or IoT, leading to a conventional BPR approach. During the transition phase (2018–2020), Business Process Reengineering (BPR) research focused on efficiency improvement, data-driven decision-making, and supply chain management. BPR expanded beyond process optimization by integrating enterprise information systems, smart manufacturing, and the Internet of Things (IoT), particularly in the banking sector, reflecting a shift toward implementation-oriented digital transformation [27–29]. However, research remains limited in terms of longitudinal evaluations and cross-country comparative studies [30].

In the following phase (2021–2022), Business Process Reengineering (BPR) became increasingly associated with digital transformation and blockchain technology as organizations accelerated their digital modernization efforts. Research highlighted the application of BPR in redesigning pension systems, improving public service delivery, and enhancing operational processes in the forestry sector through technology-enabled process innovation [31]. During this period, BPR-oriented portfolio strategies also emerged to coordinate large-scale organizational transformation, enabling firms to align process redesign with strategic digital initiatives, improve operational performance, and strengthen long-term organizational competitiveness [32].

A key research gap during this phase is the limited integration of Business Process Reengineering (BPR) with cybersecurity and process mining, despite the increasing importance of these technologies in supporting secure and data-driven digital transformation. In the latest phase (2023–2025), BPR research has shifted toward task analysis, job analysis, and AI/ML driven approaches, reflecting a stronger emphasis on intelligent automation, knowledge management, and customer-centric process redesign. This trend demonstrates the evolution of BPR from conventional process improvement toward supporting Industry 4.0 initiatives through data-driven decision-making and advanced digital technologies. However, further empirical research is still needed to validate the effectiveness of these emerging approaches across different organizational contexts.

4.2. Thematic Map Analysis

Figure 3 shows that BPR, reengineering, and business process re-engineering are fundamental themes with high centrality but low density, indicating their central role and continued development. While previous studies emphasized information systems, employee productivity, and IT-driven transformation, research integrating BPR with emerging approaches such as process mining and artificial intelligence remains limited [33].

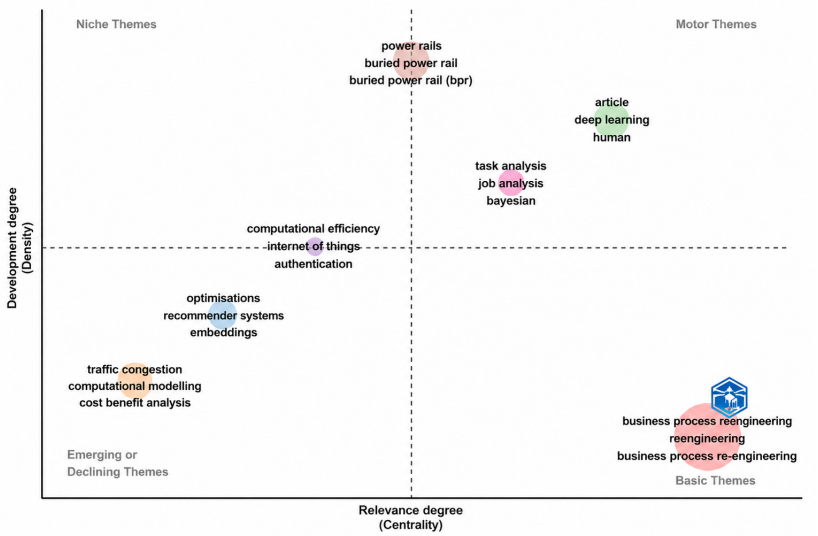


Figure 3. Thematic Map Analysis from 2015-2025 using Biblioshiny

Motor themes are dominated by deep learning and human-centered reengineering, reflecting the integration of BPR with AI, Industry 4.0, and customer-centric approaches. Their high centrality and density indicate their role as key drivers of future research, although empirical evidence on AI-enabled BPR implementation in real organizations remains limited.

Meanwhile, niche themes such as power rails and buried power rail are mature but have limited influence on mainstream BPR research [34–36]. Emerging themes, including traffic congestion and computational modeling, together with intermediate topics such as task analysis, job analysis, Bayesian analysis, and IoT, represent potential directions for future research. Recent studies particularly highlight IoT integration in BPR to improve operational efficiency and support data-driven decision-making [37].

4.3. Density Visualization Analysis

The results of keyword density mapping, illustrated from Figure 4, demonstrate that BPR research in the last ten years has mostly been about the main ideas of technology, reengineering, firm, factor, impact, strategy, case study, tool, and application. This emphasis verifies that BPR is predominantly examined within the realms of technology implementation and organizational strategy, concentrating on corporate impact and utilizing case studies as the principal methodology [38]. The significance of BPR-based portfolio strategies in facilitating organizational reengineering has been emphasized through this research, while the application of BPR as a quality improvement technique in the context of Industry 4.0 has also been further understood in recent studies [39].



Figure 4. Density Visualization Analysis

Terms such as digital transformation, blockchain, information technology, ERP, and business process management prominently support the core. This demonstrates the relationship between conventional BPR research, which focuses on information systems and ERP, and modern, more digital and data-centric methodologies [40]. Previous study has also proven the significance of digital transformation in enabling BPR implementation in underdeveloped countries [41]. Conversely, peripheral themes including organizational performance, construction, and power rail are more specialized to sectors. The data indicate that BPR applications have penetrated numerous areas nonetheless, their prevalence is minimal and their contribution to mainstream discourse is somewhat constrained.

4.4. Business Process Reengineering and Business Model

BPR supports business model innovation by improving organizational performance through agile strategies, digital entrepreneurship, and governance capabilities [42]. Its integration with IT/IS, blockchain, and performance management frameworks further strengthens process redesign and strategic transformation [43, 44]. Sectoral evidence from telecommunications, higher education, and construction demonstrates BPR's contribution to process efficiency and decision-making, although findings remain largely context-specific [45, 46]. Current research is limited by sector-based case studies and insufficient empirical evidence linking BPR, technological integration, and business model transformation across industries [47–50].

4.5. Evolution of Business Process Reengineering Research (2015–2025)

BPR research has evolved from traditional process improvement toward digital transformation and advanced analytics. Based on a systematic literature review of 197 Scopus-indexed publications, four major phases were identified. As shown in Table 2, the initial phase (2015–2017) emphasized information systems, ERP implementation, and project management to improve process efficiency and employee performance. However, studies during this period rarely explored emerging technologies such as artificial intelligence (AI), the Internet of Things (IoT), and blockchain, which later became key enablers of digital transformation [51].

Table 2. Inclusion and Exclusion Criteria for Article Selection

Time Period	Primary Focus	Key Technologies	Dominant Themes	Business Model Link	Representative Studies
Phase 1 (Foundation): 2015–2017	IT Integration and project management	ERP systems, workflow automation, basic analytics	Process efficiency, cost reduction, quality improvement	ARPM–activity-resource alignment	28% (n=55)
Phase 2 (Integration): 2018–2020	Technology-centric applications	IoT sensors, cloud platforms, mobile technologies, supply chain systems	Cross-functional integration, real-time visibility, agility	ARPM–digital capability building	31% (n=61)
Phase 3 (Innovation): 2021–2022	Blockchain and digital twins	Distributed ledgers, digital twin platforms, advanced visualization	Transparency, traceability, predictive simulation, sector-specific innovation	SDBMOM sustainability integration	23% (n=45)
Phase 4 (Intelligence): 2023–2025	AI/ML-driven redesign	AI/ML algorithms, RPA, cognitive analytics, NLP	Intelligent automation, predictive design, personalization, Industry 4.0	Compass Method–systematic BM-OM alignment	18% (n=36)

4.6. Evolution of Business Process Reengineering Research (2018–2025)

The second phase (2018–2020) marked a shift toward technology-driven implementation, with BPR increasingly integrated with IoT, supply chain management, and banking operations to improve efficiency and decision-making. However, research remained limited by the lack of longitudinal and cross-country studies [28–30].

During the third phase (2021–2022), BPR was closely associated with digital transformation, blockchain, and digital twins, supporting the modernization of pension systems, forestry management, and public services.

Nevertheless, cybersecurity and process mining remained underexplored [31, 32].

The latest phase (2023–2025) emphasized AI and machine learning, positioning BPR as a driver of customer-centric and data-driven business transformation. Despite these advances, evidence on the long-term organizational and workforce impacts of AI-enabled BPR remains limited.

4.7. Integration and Operationalization of BPR and Business Model

Recent studies highlight the growing integration of BPR with business model innovation through Agile, information systems, and blockchain technologies, enabling more adaptive and transparent business models [42, 43]. Business Model Operationalization (BMO), particularly the SDBMOM framework, translates business models into operational processes by aligning service interactions, value creation, and process design.

4.8. The Role of Digital Technology and Operational Architecture

Digital technologies, including cloud computing, IoT, and digital platforms, play a central role in operationalizing business models by improving process efficiency, automation, and organizational performance. The alignment of IT architecture, operational processes, and business strategy further strengthens digital transformation and competitive advantage.

4.9. Comparative Framework Analysis

Three major frameworks dominate the literature Activity-Resource-Process Model (ARPM), Sustainable Digital Business Model Operationalization Method (SDBMOM), and the Compass Method. ARPM focuses on resource and activity alignment, SDBMOM integrates sustainability with digital transformation, while the Compass Method provides a structured roadmap for business model transformation. Although each framework supports BPR differently, empirical validation across industries remains limited, indicating opportunities for further comparative research.

4.10. Managerial Perspective and Organizational Governance

Leadership and managerial capabilities are essential for successful business strategy execution and digital transformation. Strategic technologies such as APIs, together with practitioner competencies, organizational collaboration, and alignment between operating models, IT architecture, and strategy, enable effective business model implementation. For MSMEs, integrating managerial capabilities with digital technologies, marketing, branding, and customer experience is critical for sustaining innovation and competitiveness. The bibliometric analysis proposes the BPR–Business Model Integration Framework, comprising four digital maturity stages: Foundation, Integration, Innovation, and Intelligence. The Foundation stage emphasizes process optimization and ARPM to establish operational capabilities, while the Integration stage extends digital capabilities through IoT, cloud computing, mobile technologies, and advanced analytics.

The Innovation stage adopts blockchain, digital twins, and the SDBMOM framework to support sustainable business model innovation, whereas the Intelligence stage leverages AI, machine learning, robotic process automation, and the Compass Method to enable intelligent process management and strategic business model alignment. Framework selection depends on digital maturity and transformation scope. Organizations may adopt ARPM, SDBMOM, or the Compass Method, and follow progressive development, rapid leap, or targeted enhancement pathways based on their strategic priorities and available resources. Successful implementation requires evaluating digital readiness, defining transformation objectives, aligning BPR initiatives with organizational strategy, and continuously adapting to changing business environments.

The framework also provides practical implications for technopreneurship by supporting lean startup practices, digital platform development, ecosystem collaboration, startup scalability, and process innovation through blockchain, digital twins, and AI technologies. Finally, integrating BPR with business model innovation contributes to SDG 8 (Decent Work and Economic Growth), SDG 9 (Industry, Innovation and Infrastructure), and SDG 12 (Responsible Consumption and Production) by improving productivity, fostering industrial innovation, strengthening digital infrastructure, reducing resource consumption and waste, and embedding sustainability into business model frameworks such as ARPM, SDBMOM, and the Compass Method. Future research should empirically evaluate BPR's contribution to SDG achievement across industries and regions while developing standardized SDG-oriented assessment frameworks.

5. MANAGERIAL IMPLICATIONS

Research synthesis highlights the essential function of dynamic capabilities in the execution of business models, indicating that these capabilities affect both the design and the successful implementation and adaptation of business models in fluctuating environments. This reinforces and expands upon the current dynamic capabilities theory by highlighting the multi-tiered and hierarchical nature of organizations. Empirical evidence underscores the mediating function of business model implementation between experimentation and firm performance, indicating that operational alignment with enterprise architecture and operating models is essential for actualizing the advantages of business model innovation. This contradicts prior strategic management viewpoints that concentrated mostly on overarching design, neglecting adequate consideration of operational integration. The creation of semantic frameworks and systematic approaches for implementing business models enhances theoretical comprehension by allowing for more precise and quantifiable constructs, promoting automated evaluations, and connecting conceptual design with practical application. The amalgamation of digital transformation and technology orientation within business model innovation frameworks necessitates the inclusion of digital capabilities and infrastructure as essential components, thereby enhancing conventional business model theory with digital and technological aspects.

The literature underscores the significance of managerial and boundary-spanning practitioner competencies in enabling collaborative and digital business models, emphasizing the interaction among human capital, cognition, and social capital in achieving successful operationalizatio. Theoretical models increasingly acknowledge the multifaceted and iterative characteristics of business model innovation processes, integrating components such as experimentation, validation, and ongoing adaptation, which corresponds with evolving perspectives on organizational ambidexterity and agility. Practical Implication The findings indicate that successful business model innovation necessitates strategic experimentation along with committed resources and efforts for implementation within the operating model and enterprise architecture to enhance company performance. This necessitates a cohesive strategy that amalgamates strategic planning, operational execution, and information technology management. The implementation of structured methodologies and instruments, including the Compass Method and the semantic operationalization framework, equips managers with practical guidance for recognizing essential operational modifications and assessing business model components, thereby enhancing the translation of business model design into operational processes. Digital transformation has become a crucial catalyst for implementing business models, with actionable recommendations advising companies to cultivate digital competencies, promote technological orientation, and harness digital leadership to improve innovation and adaptability in competitive markets. Managerial capabilities, especially entrepreneurial skills and dynamic managerial competencies, are emphasized as essential enablers of digital business model transformation, indicating that organizations ought to invest in leadership development and capability enhancement to adeptly manage digital disruption. Collaborative business models necessitate a focus on the boundary-spanning competencies of practitioners and inter-organizational coordination, indicating that organizations must develop cross-functional teams and partnerships to co-create and capture value beyond their organizational limits. Policymakers and industry leaders should endorse frameworks and infrastructure that facilitate SMEs and established enterprises in effectively implementing business models, encompassing digital literacy initiatives, strategic alignment instruments, and ecosystem development projects to promote sustainable and scalable innovation.

6. CONCLUSION

The examination of Business Process Reengineering (BPR) research over the past decade reveals a substantial shift from conventional process optimization toward digitally enabled transformation and integrated business model innovation. Throughout this period, BPR has evolved from emphasizing enterprise system integration and operational efficiency to incorporating Internet of Things technologies, followed by the adoption of blockchain and digital twin technologies, and more recently the integration of artificial intelligence and machine learning to support intelligent process reengineering. This progression demonstrates that BPR has expanded beyond its traditional role as a tool for cost reduction and operational efficiency, becoming a strategic enabler of organizational agility, data-driven decision-making, and customer-centric innovation.

Furthermore, the integration of Business Process Reengineering with Business Model Operationalization, particularly through frameworks such as the Service-Dominant Business Model Operationalization Model (SDBMOM), has transformed the way organizations translate business models into operational prac-

tices. This integration strengthens digital transformation by aligning business strategy, information technology, and organizational processes, enabling firms to deliver service-oriented value propositions while responding more effectively to changing market conditions. The convergence of artificial intelligence, the Internet of Things, blockchain, cloud computing, and semantic modeling has reshaped organizational operations by enabling greater automation, real-time monitoring, and predictive analytics. These technological capabilities enhance operational efficiency, improve decision quality, and strengthen customer experience. At the same time, effective leadership and organizational governance remain fundamental to ensuring that digital technologies are successfully implemented. Managerial capabilities, adaptive competencies, and cross-functional collaboration are essential for translating technological investments into sustainable competitive advantage.

These findings contribute to the theoretical understanding of dynamic capabilities by demonstrating how they connect business model innovation, digital technologies, and operational alignment. From a practical perspective, the findings provide valuable guidance for organizations, policymakers, and industry leaders seeking to strengthen organizational resilience, scalability, and long-term sustainability. Organizations should prioritize investments in digital capabilities, workforce development, and collaborative ecosystems to maximize the benefits of BPR-driven transformation. Overall, the evidence indicates that BPR has evolved from an efficiency-oriented management approach into a strategic mechanism that fosters innovation, organizational agility, and digital competitiveness. Organizations that effectively integrate emerging technologies, operationalize innovative business models, and develop strong managerial capabilities will be better positioned to compete in increasingly dynamic and complex business environments.

7. DECLARATIONS

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7.2. Author Contributions

Conceptualization: RS, MS, MM and AT; Methodology: RS, MM and AT; Software: MS, and MM Formal Analysis: RS, MS, MM and AT; Investigation: MM and MS; Resources: AT and MM; Data Curation: RS, MS and MM; Writing Original Draft Preparation: TY and TA; Writing Review and Editing: AT and MM; Visualization: MM and TA; All authors: RS, MS, MM and AT have read and agreed to the published version of the manuscript.

7.3. Data Availability Statement

The dataset supporting the findings of this study is publicly available in the Zenodo repository at https://doi.org/10.5281/zenodo.21274576. Additional information is available from the corresponding author upon reasonable request.

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7.5. Declaration of Conflicting Interest

The authors declare that they have no conflicts of interest, known competing financial interests, or personal relationships that could have influenced the work reported in this paper.

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