

Digital Innovations Framework for Enhancing Business Process Management Strategies.

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Abstract. This paper aims to develop a framework based on nine literature studies that incorporated digital innovations into BPM in the form of structural models. The proposed framework aims to assist in enhancing organizational processes through business strategies. To achieve this, we used two reputable literature databases, SCOPUS and Web of Science (WOS), for data collection. We employed VOSviewer software for a bibliometric analysis of BPM literature encompassing 570 papers, identifying the following trending terms for our study: digital innovation, digital transformation, digitalization, BPMN, and Blockchain. The prominence of this topic in BPM literature was observed, as more than 70% of the selected papers from the Business and Management field were published in the last four years. For a systematic literature analysis, we selected nine papers that highlight the significance of digital innovations within the BPM framework. These papers formed the basis for creating a framework with nine categories that revolve around digital innovation in Business Process Management (BPM). This paper contributes to enhancing organizational management practices by illustrating how organizational strategies can be designed with a focus on digital innovations to improve processes. In terms of social implications, the study proposes an organizational model that can aid business process management in an increasingly competitive digital era market.

Keywords. Business Process Management, Digital Innovation, Strategies, Framework.

1. Introduction

This both for research and practice that guide organizations towards the future competitive market environment, the phenomenon of digital transformation has been poorly understood, and companies have followed different strategies to become more digital [1]. The integration of digital technologies and business management have provided subsidies for organizations to be able to respond to changes in the face of market dynamism [2].

Emerging technologies and digital innovations require new thoughts on BPM that optimize the value proposition for customers [3], uncovering new paths for the development of business strategies guided by technological transformations in BPM [4].

Some companies align their strategic objectives with the requirements of digital transformation, in order to integrate employees through digital expertise [1]. Organizations that effectively leverage this digital convergence through strategic management of their processes can enhance their innovation process in response to market opportunities and threats [2].

Thus, this study aimed to address the following research gap: How can digital innovations be incorporated into BPM to enhance organizational processes?

To address this research gap, a framework based on nine literature studies that incorporated digital innovations into BPM in the form of structural models was proposed. The proposed framework aims to assist business strategies for enhancing organizational processes.

This paper is structured into an introduction and four main sections. The following section offers a literature-based overview of BPM strategy and digital innovation. Section three outlines the research methodology, and section four delves into a discussion of results concerning academic contributions. The paper concludes with a section covering limitations, future research directions, as well as practical and social implications, followed by the References.

2. Literature Review

In the following topics, we emphasize the importance

of observing the integration of Information Technology (IT) concepts with administrative sciences, as they form the foundation of BPM [5]. This integration serves as a starting point for discussing digital innovations. Furthermore, it is worth highlighting that BPM is presented as a means to measure corporate performance, with its greatest contribution lying in the creation of value for the improvement of organizational processes [6].

2.1 Strategy and BPM

Strategy is recognized as a crucial element for the significance of the concept of Business Process Management [7–9].

The improvement of process management and the pursuit of organizational strategic objectives have uniquely contributed to the significance of the BPM concept [7–9]. This involves analyzing the end-to-end view of processes, from the customer's request to their final satisfaction [10], which requires the involvement of managers [11].

2.2 Digital and BPM

Many organizations have embraced innovation in business processes through the adoption of emerging technologies such as artificial intelligence (Alotaibi, 2016; Koehler, 2018). These technologies are employed to support and automate BPM [12]. However, disruptive innovations, including the utilization of social networks, Internet of Things (IoT), applications (apps), and smart devices, present significant challenges for companies in managing their business processes [13].

Digital innovations, including Industry 4.0 technologies, enable comprehensive organizational integration with BPM, thereby allowing organizations to incorporate such innovations into their value chains. The digital innovations examined in this research encompass various information technologies (e.g., smart home, smart health, smart city, smart energy, and smart mobility concepts) that will shape the management of future business processes [14].

3. Research Methods

We utilized two reputable literature databases: SCOPUS and Web of Science (WOS) for data collection. In these databases, the following search terms were used in the title, abstract and keywords: ("Business Process Management" AND "Digital*") AND ("Framework*" OR "Model*"). These searches yielded 570 papers.

Subsequently, as criteria for excluding papers, we removed: 192 duplicate papers, 272 papers not indexed in scientific journals, and 71 papers not belonging to the Business and Management field. These criteria left us with only 34 papers.

Finally, for the selection of data for framework development, only 30 papers were available. Using criteria for attribute selection through content

analysis, we were able to analyze only articles proposing models that employed digital strategies in BPM for the enhancement of organizational processes, resulting in 9 papers. This process culminated in a figure summarizing all the models proposed in this final selection.

The detailed stages of this research are depicted in Figure 1:

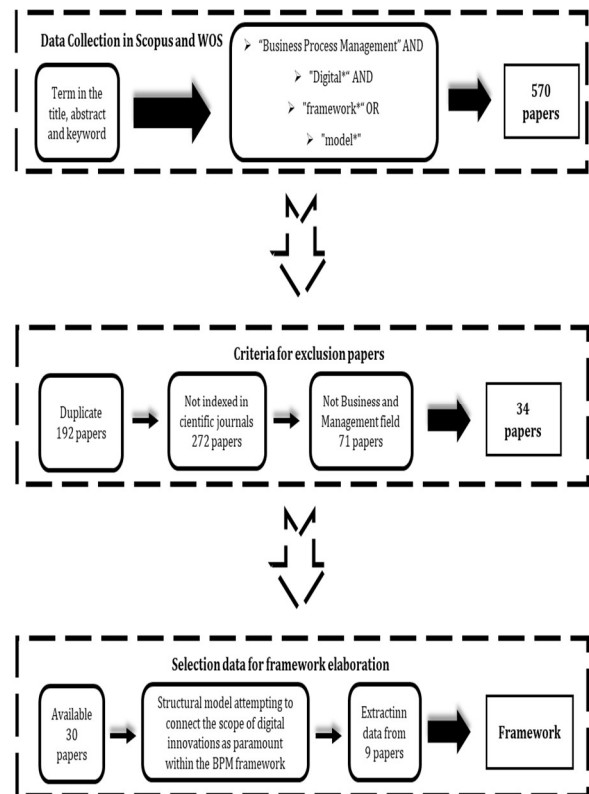


Fig. 1 - Research Stages.

4. Results and Discussion

In order to initiate discussions regarding studies that involve BPM with the creation of digital models for its improvement, we conducted a bibliometric analysis using the VosViewer software with the initial set of 570 papers selected from the SCOPUS and WOS databases..

In Figure 2, a map is presented based on bibliographic data from the co-occurrence network trend of the main terms (by title and abstract fields) found in papers searched in the SCOPUS and WOS database from 2013 to 2023. The VOSviewer software was used with the full counting terms method, starting from a total of 10,623 terms. A minimum requirement of 30 occurrences for a single term was established, resulting in a network that includes the 61 most recent main terms found in the papers.

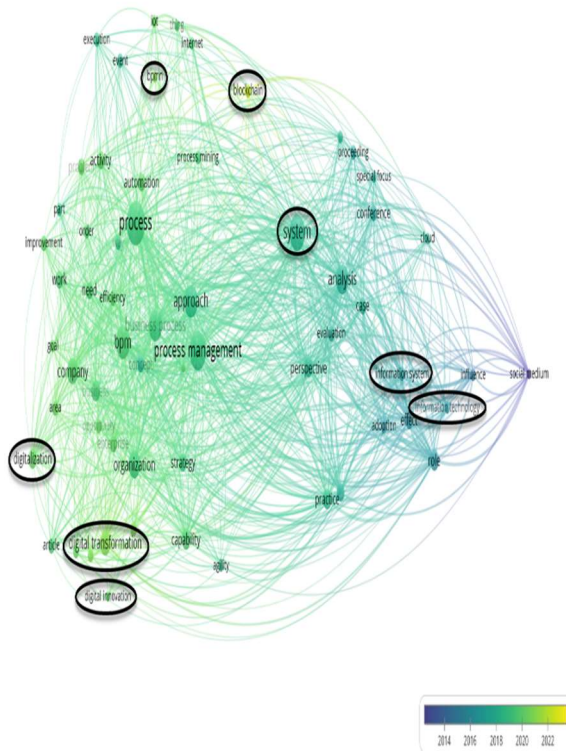


Fig. 2 – term co-occurrence map.

We can observe that there are two distinct clusters when analyzing the BPM and digital models literature.

The cluster on the left, which appears to be more focused on the digital innovation in BPM area, features the latest trending terms (light green) related to the topic, such as **digital innovation, digital transformation, digitalization, BPMN, and Blockchain**. In contrast, the cluster on the right, which seems to be more directed towards the BPM systems area, includes less frequently mentioned terms in recent years (dark green), such as **system, information system, and information technology**.

The term co-occurrence map (Fig. 2) points to the connection between BPM and the field of technology, particularly when addressing digital innovations and systems. However, there are few articles that seek to establish a framework that links these areas of study to BPM.

The theme of this article is also relatively recent in the BPM literature, as evident from the timeframe in which the 30 final papers selected in our study were published. Table 1 displays the distribution of these articles published over the years.

Tab. 1 – Papers published by year

Nº Published Papers	Year Publication in journal
8	2022
8	2020
4	2023

4	2019
2	2021
2	2018
1	2013
1	2010

Among these 30 articles, we identified only 9 that establish a structural model attempting to connect the scope of digital innovations as paramount within the BPM framework. Therefore, a framework was proposed based on these 9 papers:

Dynamic Capabilities vs. Digitalization Benefits - Digitalization as a transformer of business processes, introducing challenges and bringing benefits [15].

Digital Fusion vs. Strategic Management - Digital convergence as a business process strategy, making processes more agile and value-creating in a competitive market [2].

BPM Culture vs. Digital Innovation - Having a culture of digital innovation can enable a company to develop its capacity to innovate and overcome barriers to becoming a digital organization [16].

Success Factors (SF) vs. Digitalization Project Candidates (DPP) – Guidance for Success Factors in the Successful Implementation of Candidate Process Digitalization [17].

Service Value vs. Sociotechnological Synergy - External and internal directions based on strategic business practices in a digital environment [18].

Digital Process Innovation vs. Strategic Decisions - Digital innovations interact with Business Process Management (BPM) in a Technology-Organization-Environment (TOE) innovation framework [19].

Digital Transformation vs. Business Model - Conceptual components of a business model interconnect with the context of digital transformation for the construction and enhancement of business processes [20].

Digital Competence vs. Business Management - The application of digital competencies allows for optimal decision-making based on BPM [21].

Digital Transformation vs. Business Strategy - Digital transformation can be achieved through the structuring of a company's business process management system [22].

Based on the topics identified in the literature studies ([15], [2], [16], [17], [18], [19], [20], [21], [22]), that aimed to link digital innovations as a fundamental part of a BPM framework, it was possible to develop a framework to assist in the business process strategies of organizations in the digital era (Figure 3).

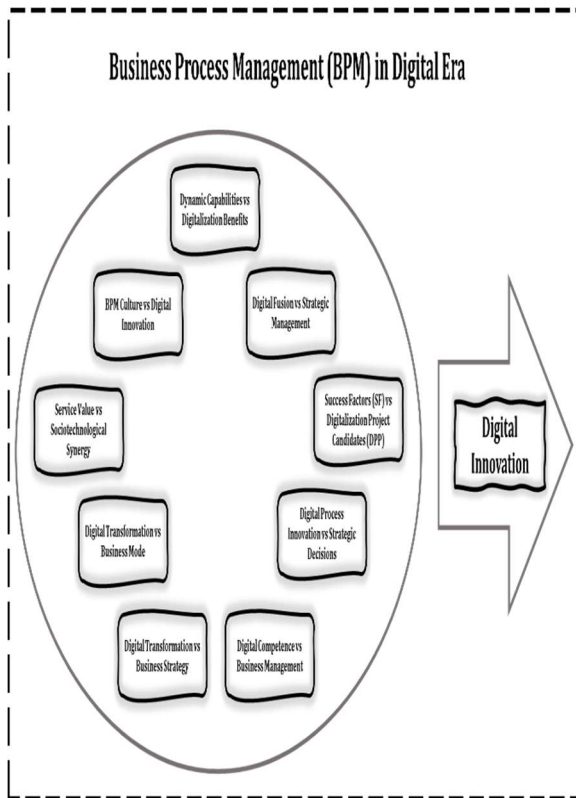


Fig. 3 – Framework.

5. Conclusion, practical and social implications

To assist in the enhancement of organizational processes, we proposed a framework that incorporates digital innovations into BPM. In this way, this study aimed to provide parameters, based on a systematic literature review of 9 papers, for the formulation of business strategies aligned with the digital era market.

This study employed a single software tool to analyze term trends in the literature related to the topic and conducted a systematic review exclusively of papers published in journals. For future studies, we encourage BPM authors to conduct quantitative and qualitative tests of the framework presented in this study, with the aim of enabling organizations to enhance their organizational processes based on digital innovation strategies in BPM.

This paper contributes to the management practices of organizations by exemplifying how organizational strategies can be structured with a focus on digital innovations to enhance processes. In terms of social implications, this study advances the proposal of an organizational model that can assist business process management in an increasingly competitive digital era market. Additionally, this study provides new insights to researchers approaching digital innovations as BPM strategies for the improvement of business processes.

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