Continuous Improvement of Process Management Considering the "AS - IS" and "TO - BE" Criteria

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Abstract

Within a business context characterized by market volatility, continuous improvement of process management is crucial. Therefore, the purpose of this paper is to find out whether the process management literature takes into account the Current Process Status (AS – IS) and As-should-be Process Status (TO – BE) criteria. The methodological approach used in this article is based on a literature review, through a bibliometric analysis covering a wide field of publications on process management, commonly referred to as BPM, considering the two criteria: Current Process Status (AS - IS) and As-should-be Process Status (TO - BE). In the bibliometric analysis carried out, there is a scarce bibliographic collection related to the "AS - IS" and "TO - BE" criteria within the business context, as well as the absence of a methodology or guide in the literature that orients the transition from one state to the other. It is important to point out that, despite the exhaustive bibliometric analysis of different databases, the selective citations may have discarded certain relevant articles that were not included in the analysis due to the use of other terms related to the two criteria. It is important to note that, to our knowledge, no systematic review of the literature in this area has been developed.

Keywords: *BPM, Business Process Management, Continuous Improvement, AS – IS, TO – BE*

INTRODUCTION

Business Process Management (BPM) is a strategic and systemic approach that seeks the continuous improvement of processes through "modeling, documentation, simulation, automation, measurement and monitoring" (1). Its purpose is to achieve strategic objectives, optimize resources and ensure stakeholder satisfaction.

When applying BPM in companies, the aim is to quickly identify the inputs, outputs, functions and activities that prevent the generation of bottlenecks, delays, errors and *mudas* that affect efficiency and quality.

Although there is an extensive body of literature on BPM, its principles, tools, methodologies, among other aspects, there is little research development on issues related to the "AS - IS" and "TO - BE" criteria, which are useful terms for the improvement of processes in the company (2). Therefore, the following question arises:

- Does the existing literature on process management consider the "AS - IS" and "TO - BE" criteria for continuous improvement?

The purpose of this research question is to find information in the literature on methodologies, techniques and tools that can be used effectively to achieve continuous improvement, taking into account two states of processes, one as it is at present and the other with improvements. Therefore, this search requires a coherent methodological frame of reference and a relevant approach to the concepts of BPM: "AS-IS" and "TO-BE".

This research comprises four sections. The first section presents the theoretical framework and related works; the second section describes and details the methodology used to collect the information and analyzes the

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literature of various authors; the third part presents the results obtained from the bibliographic research, followed by the topic of the constraints; and finally, the conclusions are presented.

THEORETICAL BACKGROUND

The concept of BPM has been around for more than two decades, and its interpretation and understanding varies widely among various authors (Buh, Kovačič, & Štemberger, 2015). The following are some conceptualizations:

- BPM: Automation and optimization of the company's processes by means of a computer program (Melecardi Zani, Marques Borges, Brum Severo, Rocha Garcia, & Miller, 2021).

- BPM: A concept interrelated with the internal and external activities of the companies (Abubakre, Fayoumi, & Eleburuike, 2021).

- BPM: Monitors how the organization operates to ensure satisfactory results and identifies opportunities for improvement to be made in processes (Thabet, y otros, 2021).

- BPM: is associated with corporate management and processes that relate directly to customer interface functions and determines the organizational and operational structure of the company (Schönreiter, 2018).

Consequently, Process Management (BPM) is the way in which the organization manages its processes to achieve its objectives. It focuses on the identification, design, documentation and improvement of key processes within the company (Feng, Han, & Tian, 2020). The main objective of BPM is to align processes with the organization's strategy and objectives, improve quality, efficiency and effectiveness, as well as foster innovation and continuous improvement. In other words, BPM aims to automate and optimize the organization's processes; and, in addition, to provide higher quality, reduce errors, reduce time, generate better performance and meet customer needs. (Zelt, Recker, Schmiedel, & Brocke, 2019).

Complementarily, BPM is directly related to quality management, Integrated Management Systems, Total Quality Management (TQM), process reengineering, Lean and Six Sigma (Schönreiter, 2018). These complement each other through holistic management, common standards (ISO 9001, 14001, 45001), process optimization and the continuous improvement approach that seeks efficiency in organizational processes (Abubakre, Fayoumi, & Eleburuike, 2021).

Therefore, organizations need BPM standards to monitor the development level and quality of products or services in order to gain a clear picture of their process maturity. BPM provides a solid foundation that allows them to measure the efficiency and effectiveness of their procedures and processes, as well as to recognize areas for improvement and optimization. (Schönreiter, 2018).

Related Work

There are several documents on bibliographic reviews on the subject of BPM, available in the repositories consulted. For example, the article "Human factor in business process management: modeling competencies of BPM roles" written by Hrabal M. et al. (2021), gives a general understanding of what BPM is; this article has been shared 1218 times from 2020 to 2023.

Another article that has been taken as a reference for this research is "BPM and BI in SMEs: The role of BPM/BI alignment in organizational performance" which was written by Pejić Bach et al. (2019). This literary research deals with topics such as "maturity", "processes", "business analytics", "business process management", among others. This item has been published in the prestigious "International Journal of Engineering Business Management" and has been viewed a total of 5,330 times to date.

On the other hand, the study by Leopold et al. (2014), addresses the problem of outstanding bibliographic repositories on "business process models"; disseminates a methodology for automatically naming process models and parts thereof. This methodology is used in model abstraction scenarios and allows to reduce the complexity of searching in the repositories. 83 people have read this document.

METHODOLOGY

This article uses a bibliometric approach that qualitatively evaluates academic articles in order to gather knowledge and clarify the issues that emerge and develop in the research process (Bakshi & Verma, 2023). Systematic research is also employed that evaluates GMP literature in greater detail and identifies areas where gaps exist; it also suggests new ways of searching.

Therefore, this document considers the systemic and literary parameters established by Webster and Watson (2022) as the basis for the synthesis, research and elaboration of this study, seeking a structural support according to the principles established by Hilary Glasman-Deal (2009).

The selection of relevant information for the synthetic literature review has been limited to the last ten years (Schönreiter, 2018), in order to know the current status of research in the field of management and systems field. An overview of the literature and its relationship to the BPM, AS-IS and TO - BE criteria is provided.
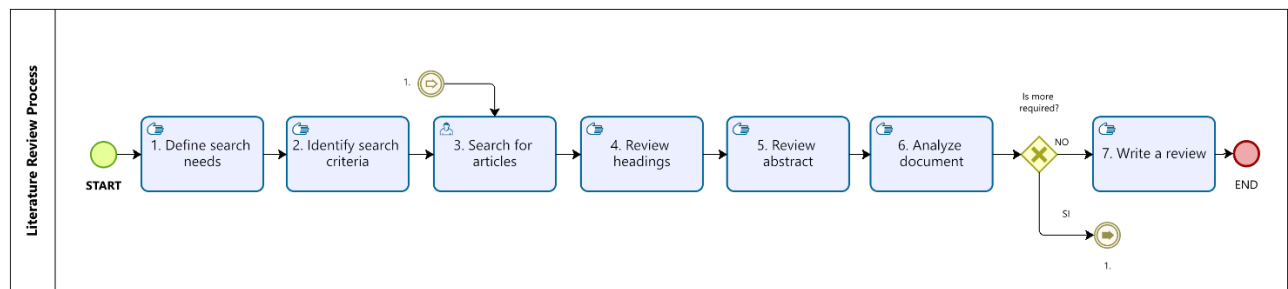
Search Process

The process of analysis and research of the literature on "BPM", "AS - IS" and "TO - BE" has been developed based on a literature search strategy using the approach proposed by Glasman-Deal (2009), which consists of the current context evaluation in order to identify the terms mentioned above.

Bibliometric Analysis Process

In order to identify and analyze the literature related to the continuous improvement of process management considering the "AS - IS" and "TO - BE" criteria, a process characterized by 7 activities is defined, as shown in **Figure 1**, which are as follows: 1. Define search requirements, 2. Identify search criteria, 3. Search for articles, 4. Review headings, 5. Review abstracts, 6. Analyze documents, 7. Write a review (Reardon, 2006):

Figure 1. Literature Review Process

Source: Own creation based on (Reardon, 2006).

At the beginning of the research process, key words were established which enabled us to locate articles related to the topics in question (Oliver P. , 2012), to subsequently establish the corresponding search formulas and Boolean operators (Webster & Watson, 2022). For the purposes of the analysis exercise, "BPM" and "Model" are determined as the main terms, since the indexed journals related to the studies are in English and the academic writers publish their articles under the premise of these terminologies. In addition, the following terms were identified for the search for information related to the literature on process management: "BPM", "AS – IS", "TO – BE", "Business Process Management", and "Methodology".

Subsequently, for the literature search within the databases, the following formulas are established with the terms identified above and using Boolean operators, obtaining these search criteria:

> ***Formula 1:*** "BPM" AND "AS – IS" AND "TO – BE"

Formula 2: "BPM" AND "AS IS" AND "TO BE"

Formula 3: "BPM" AND "Model"

Formula 4: "Business Process Management" AND "Methodology".

A search of the different repositories (SCOPUS, EMERALD, SCIELO) revealed **810** articles, of which 470 were carefully selected after reviewing the headings or names of the documents. Subsequently, the corresponding abstract was analyzed and contrasted to ensure that the selected articles were aligned with the continuous improvement approach to process management considering the "AS - IS" and "TO - BE" criteria; as a result of this discriminatory process, the number of documents was reduced to 53 articles because the articles did not contain specific information on the "AS - IS" and "TO - BE" states, and on how to go from one state to the other.

RESULTS

In order to select relevant articles, a matrix was developed based on the criteria for critical categorization of the literature (Oliver, 2012; Reardon, 2006; Webster & Watson 2022), considering the following classification: type of article, tools, and methodologies used. These criteria were subclassified as shown in Table **1. Article Analysis Framework on the continuous improvement of process management, considering the "AS - IS" and "TO - BE" states.** In the classification by the first criterion, "type of article", it is analyzed whether the documents respond to a case analysis or are related to literature, or the application of both. Therefore, it was established that the documents are segmented as follows: 38% (19 articles) are related to case studies, 15% (8 articles) correspond to literature, and 47 % (25 articles) follow both methodologies, first presenting a literature review and then the application of the findings to specific cases.

Table 1. Article Analysis Framework on the continuous improvement of process management, considering the "AS - IS" and "TO - BE" states

No.	Heading	Author	Year	Article type		Journal	Tool – Used Methodology		ABSTRACT	DOI
				Application case	Literature		Quantitative Tools	Qualitative Tools		

Subsequently, the criterion related to the tools or methodologies used or suggested by researchers to approach the study of continuous improvement of process management is incorporated, considering the criteria "AS - IS" and "TO - BE". For this purpose, the subclassification described in Table **1. Article Analysis Framework on the continuous improvement of process management, considering the "AS - IS" and "TO - BE" states;** it is worth mentioning that this search for information was consolidated after the analysis of all the articles; it can be seen that the authors of the 53 articles used quantitative and qualitative tools and methodologies, which are described in the following Table **2. Frequency of Tool and Methodology Application.** The main results of this categorization are as follows: 43 % (36 articles) apply or suggest other quantitative or qualitative tools or methodologies. In this way, the following tools stand out as the ones with the highest frequency of application:

Table 2. Frequency of Application of Tools and Methodologies

Qualitative			Quantitative		
Tool / Methodology Used	Frequency	Frequency Percentage	Tool/ Methodology Used	Frequency	Frequency Percentage
Interview	14	13%	Interview	19	27%

Expert panel	5	5%	Six Sigma	1	1%
Graphical Representation	35	33%	Statistical Analysis	28	39%
Conceptual Model	34	32%	Strategy, Indicators and Operations Model (MEIO)	4	6%
Other	17	16%	Other	19	27%

In addition, it is important to mention that the behavior observed in the application or suggestion of other tools or methodologies is not discriminatory; In other words, they are used in a complementary manner, with some being used for data collection, others for data processing, and finally for the presentation of results.

Interpretation of Results

In line with the articles analyzed, the application of several qualitative tools and methodologies for the collection of data and meaningful information has been observed; these are:

Interviews: According to the analysis of the research articles reviewed, it was found that 13% (14 articles) of the 53 articles selected included interviews; these were subdivided into several categories: in-depth interviews, interviews with domain experts, and semi-structured interviews. It was found that 50% of the authors used in-depth interviews as part of their methodological approach; 14% used interviews with relevant domain experts to collect information; and 36% of all articles used semi-structured interviews as a tool for data collection. In line with the above, authors Martin Hrabal et al (2021), Buh et al (2015), Bach et al (2019), Soffer et al. (2019), Lehnert et al. (2018), Božić et al. (2014), and Kubrak et al. (2023) chose to use in-depth interviews for data collection. In contrast, the authors Mazhar et al. (2019) and Claes et al. (2015) favored interviews with domain experts; on the other hand, the authors Abubakre et al. (2021), Goldstein et al. (2019), De Toni et al. (2015), Gross et al. (2021), and Santos et al. (2022) used semi-structured interviews for data collection.

Expert Panel: 5% (5 articles) of the total set of 53 selected articles have considered the expert panel as a relevant tool for the development of their research. Authors who implemented this methodology are Mazhar et al. (2019), Harabal and Tuček (2018), Bach et al. (2019), Goldstein et al. (2019), and Garza Reyes (2018).

Graphical representation: It was noted that 33% (35 articles) of the 53 selected articles used graphical representation, and of these 60% (21 articles) suggested the BPMN 2.0 notation for process modeling. Authors who considered using BPMN 2.0 in their research include Zani et al. (2021), Mazhar et al. (2019), Thabet et al. (2021), Cabanillas et al. (2018), López et al. (2019), Abubakre et al. (2021), Claes et al. (2015), Sánchez et al. (2018), Soffer et al. (2019), Zhang et al. (2021), Del Río et al. (2013), Tutkute et al. (2013), Jose et al. (2020), Del Río et al. (2014), Goldstein et al. (2019), Arévalo et al. (2016), Kalenkova et al. (2019), Janiesch C. and Kuhlenkamp J. (Janiesch & Kuhlenkamp, 2019), Scherer et al. (Arévalo, Escalona, Ramos, & Domínguez Muñoz, 2016), Scherer et al. (2017), Zarour et al. (2020), and Martins et al. (2019).

In addition, 37% (13 articles) of authors: Lautert et al. (2020), Hrabal et al. (2021), Yan et al. (2017), Leopold et al. (2014), Abu Salma et al. (2021), Kazakov et al. (2020), Lin and Ishida (2014), Betocchio et al. (2016), Bozic et al. (2014), Lizano et al. (2017), Kubrak et al. (2023) and (Navarrete Reynoso & Cruz, 2010) used graphical representations in their research; and only authors Leyer, Aysolmaz & Iren (2020) used graphical representation and SIPOC in their article.

Conceptual model: 31% of the articles included the use of conceptual models as part of their research methodology. Among the authors who used this technique are Lautert et al. (2020), Mendling et al. (2017), Pereira et al. (2020), Thabet et al. (2021), Buh et al. (2015), Zelt et al. (2019), Cabanillas et al. (2018), Harabal and Tuček (2018), Varela (2016), Leyer et al. (2020), Mazhar et al. (2019), López et al. (2019), Bach et al. (2019), Claes et al. (2015), Soffer et al. (2019), Zhang et al. (2021), Lehnert et al. (2018), Kazakov et al. (2020), Derkacz et al. (2021), Del Río et al. (2013), Tutkute et al. (2013), Jose et al. (2020), Del Río et al. (2014), Arévalo et al. (2016), Scherer et al. (2017), Gross et al. (2021). Ramos et al. (2019), Garza Reyes (2018),

Kubrak et al. (2023), Machado et al. (2023), Navarrete and Cruz (2010), Looy and Poels (Looy & Poels, 2019), and Martins et al. (2019)

On the other hand, within the research it was found that 17% (16 articles) of the total number of articles use other qualitative tools and methodologies, such as: BPRIM, RAMBI Metamodel, Delphi study, FODA, refined process structure tree (RPST), linguistic analysis, document analysis, PPINOT metamodel, real-life scenarios, EPC (Event-driven Process Chain) diagrams, BPD-Space, documentation analysis, and in situ observation.

With regard to quantitative tools and methodologies, the following was observed:

Survey: of the 53 articles selected, 27% of them (19 articles) used surveys for data collection. Within this category, a subset equivalent to 16% (3 items) was represented by Likert-type surveys, where authors Gudelj et al. (2021), Goldstein et al. (2019), Gošnik and Stubelj (2022) employed this relevant methodology in their research work.

Likewise, it was found that 21% (4 articles) of the authors adopted the methodology of open-ended questions in their surveys; they were: Batocchio et al. (2016), Ramos et al. (2019), Garza Reyes (2018), and Santos et al. (2022). On the other hand, the authors Martin Hrabal et al. (2021), Harabal and Tuček (2018), Mazhar et al. (2019), and Abubakre et al. (2021), representing 21% (4 articles), used multiple choice as the data collection method. In turn, Pereira et al. (2020), Bach et al. (2019), Claes et al. (2015), and Thabet et al. (2021) applied descriptive surveys. Finally, 21% (4 articles) conducted matrix surveys for data collection: Buh et al. (2015), Lehnert et al. (2018), De Toni et al. (2015), and Zarour et al. (2020).

Six sigma: within the context of the analysis of the 53 selected articles, it could be seen that authors Hrabal M., Tuček, Molnár and Fedorko (2021) constituted 1% of the total who used the six sigma methodology in their research, in order to obtain more consistent results.

Statistical analysis: authors such as Hrabal et al (2021), Gudelj et al. (2021), Pereira et al. (2020), Thabet et al. (2021), Feng et al. (2020), Harabal and Tuček (2018), Varela (2016), Leyer et al. (2020), López et al. (2019), Bach et al. (2019), Abubakre et al. (2021), Yan et al. (2017), Leopold et al. (2014), Claes et al. (2015), Sánchez et al. (2018), Abu Salma et al. (2021), Zhang et al. (2021), Lehnert et al. (2018), Tutkute et al. (2013), Jose et al. (2020), De Toni et al. (2015), Bozic et al. (2014), Lizano et al. (2017), Kalenkova et al. (2019), Zarour et al. (2020), Machado et al. (2023), Santos et al. (2022), and Dušan Gošnik, and Igor Stubelj (2022) accounted for 39% (28 papers) of the 53 papers that used statistical analysis.

Strategy, Indicators and Operations Model (MEIO): is a tool that represents 4% of all the selected articles. This tool has been taken into account by the following authors: Zani et al. (2021), Harabal and Tuček (Hrabal & Tuček , 2018), Abubakre et al. (2021), Lin and Ishida (2014) for information search.

On the other hand, within the analysis of the 53 selected articles, it was observed that 27% (19 articles) used other quantitative tools and methodologies such as: Petri net, Minimum cost transition system, Logical Diagnosis Approach, FDI, Analytical Redundancy Approach, Key Exchange Method (KEM), Analytical strategy, Algorithms for process similarity search, SCgn metric, Observation, PPMChart, Evaluation of alignments generated from the automatic text-model, Methods for dynamic adaptation of business processes, Network analysis (PageRank algorithm), Calculation of PPI values, Dynamic analysis, Co-citation analysis, Network analysis, Trend analysis and Financial data analysis.

On the other hand, the Literature Review Synthesis Matrix where the analysis of the 53 selected articles was carried out reveals a plethora of tools and methodologies employed by researchers for the collection of information and data analysis in the various areas of study. Among the most widely used qualitative methodologies are interviews, categorized by their different modalities, accounting for 13% of the articles. It is important to mention that in-depth interviews are the most frequent tool used in this research approach.

At the same time, it was found that 33% of the articles used graphic representations, especially BPMN 2.0 notation, which accounted for 60% (21 articles) of the total, allowing the information obtained to be visualized and communicated effectively.

In terms of quantitative methodologies, it was observed that the survey covers 27% of the selected articles, with a varied approach including Likert-type surveys and open-ended questions. In addition, it was found that statistical analysis was used in 39% of the articles for the processing and analysis of academic research. On the other hand, the Six Sigma tool (1%) and the Model of Strategy, Indicators and Operations (MEIO) (4%), were evident in certain contexts of the studies.

In this context, it is important to mention that, of the 53 articles analyzed, only Navarrete and Cruz (2010) explicitly address the continuous improvement of process management by considering the "AS - IS" and "TO - BE" criteria.

On the other hand, the remaining articles are limited to presenting BPM through studies, cases, methodologies and tools, without going into the "AS - IS" and "TO - BE" criteria in their research.

DISCUSSION

Studies on the continuous improvement of process management have taken on greater relevance and presence in the construction of the research acquis, which is evident through publications in different indexed journals of high scientific impact, where the development of literary methodological construction and various cases of application at a global level in relation to BPM is included.

At its core, process management is a systemic method used to analyze, manage, design and continuously improve the company's activities in order to achieve strategic objectives, optimize resources, generate value for customers, reduce *muda* and promote a better quality of the products or services that the organization offers to the market.

However, it has not been possible to find information on the "AS - IS" and "TO - BE" states of processes, and the tools that could be used. Therefore, it is necessary to develop and deepen the study of these concepts.

Therefore, it is of utmost importance for organizations to be aware of the "AS-IS" and "TO BE" states. The "AS-IS" state is described as the understanding and documentation of the business processes and how they are currently in place. This state identifies activities, employee roles and interfaces within the organization. Therefore, it is important to examine, analyze, monitor and evaluate the existing processes in order to know which areas within the company need to be improved.

Once the analysis of the current "AS-IS" state has been carried out, the transition to the "TO-BE" state is made through the improvement of the organizational processes, with the purpose of reaching the established objectives and allowing the application of different tools to a phase of improved and optimized processes.

At this state, new workflows must be designed, opportunities for process automation must be discovered, roles and responsibilities must be redefined, and key performance indicators (KPIs) must be determined to measure progress.

Therefore, the importance of the "AS-IS" and "TO-BE" states in process management lies in their ability to provide a general and strategic vision of continuous improvement within organizations. These states represent key moments in the process optimization cycle and are fundamental to achieving strategic objectives and adapting to the changing environment.

CONCLUSION AND LIMITATIONS

The purpose of this article is to contribute to future research through a literature review on the continuous improvement of process management considering the "AS - IS" and "TO - BE" states. Therefore, to achieve this objective, a systemic analysis of the corresponding literature was carried out in order to have a clearer and broader vision of the subject in question.

The core finding of this research shows that there is not enough literature related to the "AS - IS" and "TO - BE" states within the business context, as well as the absence of a methodology or guidelines in the literature to manage the transition from one state to another.

On the other hand, it is important to mention that during the bibliographic review, certain limitations arose. One of them was the selective citation strategy that implied that certain relevant articles were not incorporated into the analysis, even though the scope of the search in various databases and the examination of the abstracts of the selected articles were exhaustive.

Therefore, in order to minimize this probability, the recommendations proposed by Reardon (2006) , Webster & Watson (2022), Glasman-Deal (2009) y Schönreiter (2018), were adopted and followed. These were used to ensure transparency and completeness in the review process. However, it is important to note that, despite these efforts, there is always a residual possibility that some relevant publications have not been included in this literature review.

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