

Dear editors and reviewers,

We would like to thank you for your review effort and the opportunity to revise the paper. We have revised the paper according to the comments from reviewers. Please find our response to each and every comment below.

Reviewer 1:

The topic is interesting and relevant to the journal. However, in its current state, the paper suffers from many shortcomings, as follows:

R1.1) The introduction and methodology sections lack many references. Please add relevant references.

Response:

Thank you for your suggestion. We address this comment by adding references to the Introduction and Methodology. Please see the revised sections with 8 new references. The whole introduction section is also revised to motivate better the research problem:

Action:

Please check the new Introduction section.

R1.2) Another limitation is that this paper does not provide a qualitative, in-depth analysis of the literature. For this purpose, it would be helpful to conduct a content analysis.

Response:

Thank you for your suggestion. The typical bibliometric study focuses on analyzing and evaluating patterns and trends within scientific literature with quantitative approaches like citation analysis, co-authorship analysis, etc. However, we see the comments are useful and provide some narrative synthesis of literature in a form of tailored content analysis.

Action:

Section 3.5 now is titled Citation and content analysis:

“Table 7 shows the top ten most cited papers. Gregory Vial mentioned dynamism in digital transformation as a new research direction in the future. Peter Trkman used dynamic capacity theory to point out recognized the key success factors of BPM in its publication. Peffers' vision, future research trends on BPM are also mentioned quite commonly and specifically (Rosemann, 2014). Jan vom emphasizes research on identifying and describing business context for BPM research (vom Brocke et al., 2016). More specifically, in digital transformation, BPM is the driving force behind innovation in the digital world, a powerful frame of reference that separates the complexities of a holistic approach (Rosemann & Vom Brocke, 2014). Research on information systems is also encouraged to explore and develop (Webster & Watson, 2002), research methods on information systems (the science of process model design) are also interested and consulted. The landscape of digital disruption also spurred studies on new BPM models (Rosemann, 2014). In addition, there are studies related to strategic angles (information technology strategy, digital business strategy, digital transformation strategy...) to reform the information system and processes. The digitalization process for the company is also well referenced and cited (Matt et al. 2015; Dumas et al. 2013; Vial, 2021). Matt stated that the use of technology, changes in value creation, structural changes and financial aspects are elements of the organization's digital transformation strategy (Matt et al. , 2015). The fusion of IT strategy and business strategy is what Bharadwaj calls digital business strategy. After systematizing

related documents, Vial has unified the concepts of digital business strategy – DBS and digital strategy. (Bharadwaj et al., 2013; Vial, 2021). Emerging as a bright spot and interested in, referenced and cited by many studies is a series of theories on BPM (Dumas et al., 2013). Thus, it can be seen that BPM is the connecting link between the organization's DT and IS. Especially the term "strategy" is the bridge for all the resources of the organization. To achieve efficiency in digitalization, organizations must flexibly and creatively apply management methods combined with sound strategies."

Section 3.8:

One aspect that has been of interest since the emergence of the BPM platform is business process modeling. This term is closely linked to the BPMN (Business Process Model and Notation) tool. BPMN is utilized as a tool to help companies model and make business processes more transparent through the effective exploitation and use of technological resources (Warnecke et al., 2018) ; (Andersons et al., 2021) ; (Di Giuda et al., 2021) . Additionally, BPMN is very useful in graphically representing gaps in information flows and serves as the foundation for automating business processes, designing flexible and adaptive processes, and enhancing dynamic and intelligent capabilities for systems (Engels et al., 2018) ; (Sott et al., 2021) ; (Dolle et al., 2022) ; (Ribeiro et al., 2022) . Furthermore, BPMN is not only flexible but can also be extended and used in conjunction with other models to enhance business performance (Etinger et al., 2019) ; (Venkatakumar & Schmidt, 2019) ; (Mikhailov et al., 2020) ; (Schinle et al., 2020) ; (Rudan et al., 2021) ; (Essefi et al., 2022) . The trigger for business processes is always present in BPMN, which enables the integration of new technologies into digital processing, ensuring harmony between data and IT (Garcia-Garcia et al., 2021) ; (Hacks et al., 2021) ; (Schäffer et al., 2021) ; (Winter et al., 2021); . BPMN helps to better simulate, differentiate and compare between Business Process Reengineering (BPR) and Business Process Optimization (BPO) (Tariq & KHAN, 2022) . The term "dynamic capabilities" gained considerable attention, especially after being recommended by Vial Greg in his detailed study on digital transformation (Vial, 2021) . Research on related theories of dynamic capabilities has since gained momentum, coinciding with an increase in the number of firms focusing on digitalization in recent years. The application of management theories to improve business operations has always been emphasized. The theory of dynamic capabilities can be valuable in understanding how digitalization benefits business operations. Therefore, studies on the dynamic capabilities of firms, and their subsequent integration with the reality of digitalization in firms, will always be important topics of interest (Andersons et al., 2021) . Based on the view of strategic management capabilities, dynamic capabilities are used to classify the capabilities of business process management (BPM) when associated with the benefits of digitalization (Antonucci et al., 2021) . Dynamic capabilities can also be understood as organizational agility (OA). As digital transformation brings about changes and disruptions (Vial, 2021) , the ability of companies to adapt and respond to these disruptions promptly is essential. Understanding the interactive relationship between digitalization and organizational agility in processes will help companies find better management solutions (Ciampi et al., 2022) . An interesting finding is that the research trends "process management", "business process modeling" and "dynamic capabilities" are all related to "enterprise resource management",

“digital transformation” and “business process management”. The literature in our research shows that there are always tangible links between the digital landscape, process management, and an organization's ability to adapt, integrate, and reconfigure its components. In particular, business strategy and digitization solutions enable organizations to efficiently integrate and manage their core business processes and resources. A series of new management methods and models that integrate, combine, and hybridize business process management, technology, digitalization, or business administration have been researched and implemented by organizations. For example, digitization and business process management are based on a strategic management perspective (Antonucci et al., 2021). Or as the study of business process management culture (Kregel et al., 2022). A study of the effective implementation of process modeling in business process management for knowledge-driven digital transformation and social digitization requires rethinking of how to structure and model processes in the current context. The study emphasizes the process model and its foundational principles (such as project management and business process management) combined with organizational strategy (Ochara et al., 2018). A structured assessment of the success of a process digitization project based on the perspective of business process management and project management is also included (Baier et al., 2022). Meanwhile, (Stravinskiene & Serafinas, 2020) is interested in interdisciplinary research on the link between business process management and quality management. In a study on the shipping industry, (Feibert et al., 2017) demonstrated the concept of integrated digital and business process management to improve supply chain performance for shipping companies. To develop methods for the successful implementation of digital solutions, (Martinez, 2019) used the concept of "digital path" to refer to the process by which an organization can adopt and deploy digital strategies and technologies to transform their operations and business models. It involves leveraging digital tools, technology, and data to enhance efficiency, improve customer experience, and drive innovation.

R1.3) A crucial question needs also to be addressed: what is the contribution of this research to the theory and practice of DT and BPM?

Response:

A bibliometric study can typically contribute to theory in several ways:

- Identification of research gaps: By analyzing the existing literature, bibliometric studies can help identify areas of research that have received relatively less attention or remain underexplored. We have done this and pointed it out the relevant details in Section 3.8, Figure 10 - Figure 14.
- Conceptual evolution and refinement: Bibliometric analyses can reveal patterns in the usage of key concepts and terms within the literature. We have done citation analysis (section 3.5), co-word analysis (section 3.6), and factor analysis (section 3.7).
- Mapping intellectual structure: Bibliometric mapping techniques, such as co-citation and keyword co-occurrence mapping, can provide visual representations of the intellectual structure of a field. These maps show how different theories, concepts, and authors are interconnected and can provide insights into the development of theory over time.

Overall the contribution is highlighted now in both Abstract, Introduction and Conclusion of our paper.

Action: updating several parts of the paper to highlight the contribution

R1.4) Some references seem incomplete.

Response:

Thank you for your suggestion. The reference list is improved and revised. We have now 78 references in our list

Action:

Section Reference is updated and revised

R1.5) Comments on the Quality of English Language

The paper has many typos, and it would benefit from proofreading by a native speaker.

Response:

Thank you for your suggestion. The paper is now proof read by tools and native speaking professions.

Action:

The whole paper is revised and linguistically corrected.

Reviewer 2:

R2.1) This paper focuses on a bibliometric analysis of research on digital transformation and business process management from 2007 to 2022.

Lines 47 to 51 : I do not understand the sentence.

Response:

Thank you for your suggestion. The paragraph is removed and rewritten completely.

Action:

Please see the new Introduction section for the improvement.

R2.2.) From 51 to 54: The sustainable aspects are not introduced.

Response:

Thank you for pointing out this incompleteness. The paragraph is removed.

Action:

Please see the new Introduction section for the improvement.

R2.3.) Pay attention to mistakes : example at the beginning of line 65.

Lines 70 to 73: I don't understand the sentence space after management in line 75.

The sentence lines 76-77 has to be improved.

Pay attention to spaces: example line 80, 81, 83...

line 117 : space

from 125 to 138: this part has to be improved.

The section on the Inclusion criteria can be more detailed.

Response:

Thank you for pointing out the mistakes. The paragraphs are removed and rewritten completely.

Action:

Please see the new content in our revised version of the paper.

R2.4.) The section on results is difficult to understand. We need to know exactly what the authors want to show. It seems like just an analysis without effective conclusions. The section will be improved by adding these conclusions.

Response:

Thank you for your suggestion. We agree that the current version has some limitations in reporting the findings. We significantly improve the Result section, remove some Figures, analysis that are not important for the study, rewrite some analysis.

Action:

Please see the new Result section from Section 3.1 to 3.8.

R2.5.) The section 4 is good.

The conclusion can be improved by showing the objective of the paper and how it has been reached in the paper. Papers including sustainable aspects in the digital transformation are missing.

Response:

Thank you for your suggestion. We update the paper section on the “sustainable aspects” to reflect the correct content from selected papers.

Action:

No further revision on this comment

R2.6.) More details on the digital transformation tools could increase the quality of the paper.

Response:

Thank you for your suggestion. We have tried our best to improve the description on Digital transformation part.

Reviewer 3

R3.1) Dear Author/s, I find your study interesting and worthy of investigation. It has been my pleasure to read it. I would suggest some minor improvements per the following comments. Please correct the usage of abbreviations. The abbreviation should be introduced the first time the full term is mentioned in the text, and after that only abbreviation should be used for that term, or only the full term should be used, it should not be mixed. For example, you repeat full terms alongside abbreviations in the discussion and again in the conclusion.

Response:

Thank you for your comment. The two important keywords in our paper is Digital Transformation and Business Process Management. We have reviewed and correct the use of these terms through out the whole paper!

Action:

revise the whole manuscript for consistent use of terms and abbreviations.

R3.2) Please pay more attention to the editing process, there are some extra spaces etc. I would suggest shifting limitations and directions for future research from discussion to conclusion.

Response:

Thank you for your suggestion.

Action:

We have revised the manuscript with correcting typo mistakes and language mistakes.

R3.3) I would also suggest strengthening your discussion a bit. When discussing the results of your research please compare them with other authors' results if there is any similar research and if no results are available, please specify it in the text.

Response:

Thank you for your suggestion. The discussion section is updated to strengthen our findings.

Action:

Updating the discussion section.

Reviewer 4

R4.1)

Line 65: missing BPM word

Line 73: incomplete sentence

Line 68-70: provide reference

Line 88: provide reference

Line 93-94: Please give some illustrations to differentiate between theme and trend for better readability

Line 110 recheck sentence.

Line 211: Please explain better “(approximately 0.64% per year)”

Line 227: Please fix “(151.13.1%)”

Line 273: . The findings of “We” show....., what is We

Line 308: mention reference number

Response:

Thank you for detailed and actionable comments. We fix the given mistakes and searched for similar problems in the whole manuscript.

Action: revising the whole manuscript.

R4.2) What is the reference frame to describe the local cited document and what is its importance? (Table 7)

Response:

Thank you for your suggestion. The table about local cited papers is now removed as it does not contain important information and also redundancy.

Action: remove Table 7.

Reviewer 5

R5.1) The authors have used Scopus and WOS, and preliminarily evaluated documents related to research on DT and BPM - these are 2 separate topics and a better title could consider DT in BPM or BPM in DT??

Response: Thank you for your suggestion. We agree with the reviewer about having a more focused view in this study. We significantly revise the paper with the focus on BPM in DT.

Action:

The new title is: A Quantitative Review of the Research on Business Process Management in Digital Transformation: A Bibliometric Approach

The introduction is updated to reflect the focus of the paper:

Vial et al. highlighted the process aspect of DT, and the DT journey encompasses multiple stages and processes taking place in various contexts, where BPM can fit into this process. Many BPM topics can contribute to these process elements of DT; however, empirical research in this area is relatively limited. The combination of traditional BPM models and the recent business context of DT has triggered new research directions in process management, including lightweight (agile) processes, the flexibility of infrastructure, and stakeholder engagement.

To systemize research on BPM in DT context, a secondary study, i.e. survey study or literature review could be useful to draw a research map and research gap. To have more quantitative insight, we are interested in performing a bibliometrix study. Bibliometrix has been widely applied in many fields to analyze and synthesize valuable insights and knowledge about the characteristics, patterns, and trends within a specific field of study or research (Pritchard 1969). Bibliometrix is a useful tool for quantitative and qualitative analysis of published academic literature(Gao, 2013)(Baiyere et al., 2020)(Lizano-Mora et al., 2021)(Pritchard, 1969; Small, 2003). (Small, 2003). This study used R package Biblioshiny Bibliometrix[1] (Massimo & Corrado, 2020), which helps to visualize the research results in this paper.

R5.2) There are so much studies done on DT and BPM. This research is of contribution if the impact of DT on BPM and vice versa are investigated.

The authors considered two research questions tRQ1 - What are the dominant research themes in research about DT and BPM? Well, many articles for several decades have explored this - nothing new!!

RQ2 - What are the trends in research about DT and BPM? Again, several articles have explored this - nothing new!!

Response: we agree with the reviewer. We also provide a summary of previous secondary studies on DT and BPM. We highlighted our new contribution to the field with this study. We also updated the RQs to reflect the new focus.

Action: revise the introduction section:

There are several existing bibliometric studies in either BPM or DT. To name a few, Wohlhaupter (2012) analyzed BPM articles in the period 2000-2020 and identified common topics on process

mining, process flexibility, process modeling, process compliance, intelligent business, ERP, and SOA (Wohlhaupter, 2012). The authors included 624 articles in this bibliometric study. Chawla and Goyal (2022) conducted a comprehensive bibliometric study on DT in business and management literature. The study depicted the overall increasing trends of annual publications, author performance, publishing journals, relevant organizations, and countries driving the research, along with key insights from co-citation network analysis. Furthermore, the study evaluated four research domains, namely organizational impact, applied applications and deep understanding, operational processes, and societal aspects, encompassing major research directions within the DT context.

In this study, we aim [AND1] to provide a report on scientific publications in research about BPM in DT context. Two research questions (RQs) are defined:

- RQ1 - What are the dominant research themes in research about BPM in DT context?
- RQ2 - What are trends in research about BPM in DT context?

R5.3) The authors conclude: The results regarding the main research themes on DT and BPM are "business process management," "digital transformation," and "digitalization." Analyzing the relationship between these themes corresponds to contributions from theory to practice regarding new methods and models of business process management in the context of digital transformation appearing in many publications from different authors and organizations. In addition, the research trends on DT and BPM are also identified as "process management," "business process modeling," and "dynamic capabilities."

These findings are not new and contemporary textbooks already have them as the fundamental theory behind BPM.

This shows that there are still many issues in process management, process modeling (from a management perspective), and considering the dynamic capabilities of organizations to bring their processes closer to DT, which is a field that has much potential for further research. To help organizations achieve good results and high efficiency for digital transformation, issues regarding the organization's capabilities (dynamic capabilities), well-executed process management and modeling will be determining factors.

All these are known facts.

Response: thank you for your comment. An extensive amount of information is extracted from bibliometric analysis and it is a difficult task to select relevant and important insight. We rework our analysis and update the findings by reporting emergent trends and themes.

Action: update some sections, for example in the Conclusion section we update the text as follows:

“ In addition, the emerging trends on BPM in DT are identified, such as “administrative data processing”, “business process model”, “enterprise resource management” and "dynamic

capabilities." This shows that there are still many issues in process management, process modeling (from a management perspective), and considering the dynamic capabilities of organizations to bring their processes closer to DT, which is a field that has much potential for further research. To help organizations achieve good results and high efficiency for digital transformation, issues regarding the organization's capabilities (dynamic capabilities), well-executed process management and modeling will be determining factors"

R5.4) Please refer to similar research having more appropriate research questions and results that would interest readers. An example is given below:

<https://www.sciencedirect.com/science/article/pii/S0268401221001596>

Response: thank you for your suggestion. We have reviewed several bibliometric studies before conducting this work. The method used in this paper is from an established paper with a good number of citations. The work was also done in a systematic manner so that other researchers can repeat the process.

Action: no action taken