
REDUCING A MANUSCRIPT'S PUBLISHING TIME IN AN OPEN ACCESS JOURNAL: A STUDY BASED ON LEAN PHILOSOPHY

REDUZINDO O TEMPO DE PUBLICAÇÃO DE UM MANUSCRITO EM UM PERIÓDICO
DE ACESSO ABERTO: UM ESTUDO BASEADO NA FILOSOFIA *LEAN*

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ABSTRACT

Communication will occur with the circulation of scientific information, with information being the product and communication being the process of exchanging ideas between individuals. As the main means of scientific communication, the scientific journal stands out. With the advent of the Internet, the scientific journal underwent many transformations, including the transition from print to electronic. What can be observed is that this transition mainly changed the distribution and visibility of the editions. Regarding the editing process, the use of publishing software has facilitated the accomplishment of the editor's tasks. Although electronic publishing has given the process agility and greater visibility to articles, it is found that, in essence, there was only a migration from traditional magazines to digital format. Thus, this research proposes to analyze the editorial process of an open access journal and make it free of waste, based on the principles of lean thinking, lean thinking. Lean thinking refers to a management philosophy that meets the needs of reducing the publication time of the scientific article. The research was characterized as a case study, where a scientific journal was selected, for convenience, to perform the study. The results achieved identified that, through Lean, it was possible to propose a future editorial process free of waste and with considerably reduced publication time.

KEYWORDS

Scientific journal. Editorial process.

RESUMO

A comunicação dar-se-á com a circulação das informações científicas, sendo a informação o produto e a comunicação o processo de troca de ideias entre os indivíduos. Como principal meio de comunicação científica, destaca-se o periódico científico. Com o advento da Internet, o periódico científico passou por muitas transformações, entre elas a transição de impresso para eletrônico. O que se pode observar foi que essa transição alterou principalmente a distribuição e visibilidade das edições. Em relação ao processo de edição, o uso de software de publicação, tem facilitado a realização das tarefas do editor. Muito embora a publicação eletrônica tenha conferido agilidade ao processo e maior visibilidade aos artigos, verifica-se que, em essência, houve somente a migração das revistas tradicionais para o formato digital. Com isso, essa pesquisa propõe analisar o processo editorial de um periódico de acesso aberto e torná-lo livre de desperdícios, tendo como base os princípios do pensamento enxuto, o *lean thinking*. O *lean thinking* refere-se a uma filosofia de gestão que vem ao encontro das necessidades de diminuição do tempo de publicação do artigo científico. A pesquisa foi caracterizada como estudo de caso, onde foi selecionado um periódico científico, por conveniência, para a realização do estudo. Os resultados alcançados identificaram que, por meio do *Lean*, foi possível propor um processo editorial futuro livre de desperdícios e com tempo de publicação consideravelmente reduzido.

PALAVRAS-CHAVE

Periódico científico. Processo editorial.

1 Introduction

Technologies have decisively changed some aspects of scientific communication, offering innovative alternatives such as “computer use for publishing and publishing traditional printed documents, enabling the emergence of online databases and machine-readable texts, and then entirely electronic journals.” (Müller, 2000, p. 32).

Despite technological advances, in the sense of developing software that supports the realization of the editorial flow of journals, as in the case of the Open Journal System (OJS) and the use of electronic mail, which has made communication between editors and others faster. involved in the flow, however, the processes are generally the same as those in print magazines.

The editorial process has been computerized but is not criticized in relation to what is practiced and in order to reduce the publication time. This research discusses the proposal to analyze the editorial process of an open access journal with a view to making it free of waste, based on the principles of “dry thinking” the *lean thinking*¹. Lean thinking corresponds to a management philosophy that advocates the absolute elimination of waste of time, resources and human resources, defined by Womack and Jones (1988, p. 3) as “[...] a way of specifying value, align the actions that create value in the best sequence, carry out the activities without interruption each time someone requests them and in a more and more effectively way ”.

In this context, it is understood that lean thinking meets the needs of reducing the time needed to complete the editorial process. To this end their tools can be applied, especially in this research, Value Stream Mapping (MFV). Through MFV, it is possible to identify activities within the production process and readjust / eliminate activities that do not add value to the customer. In the case of publication of the scientific journal, the purpose is to apply lean as a way to eliminate / adjust the activities in the publishing process with low or no value and, thus, to reduce the waiting time for publication.

With this approach, it is expected to obtain a significant theoretical contribution to the area of information dissemination, scientific communication and an important contribution from the perspective of reducing the publication time of the open access scientific journal.

2 Periodics in Scientific Communication

Hayashi and Guimarães (2016) understand that scientific knowledge is built through a social process that occurs from previous results, which are recorded and retrieved through scientific communication. This makes publication and dissemination dependent on communication processes to communicate with peers and to disclose to lay people all that is produced by the community of researchers that compose them.

Communication will occur with the circulation of scientific information, with information being the product and communication being the process of exchanging ideas between individuals:

¹ The term lean thinking means lean thinking.

Scientific and technical activities are the source from which scientific and technical knowledge will emerge, which will, once registered, become scientific and technical information. But conversely, these activities only exist, they only materialize through this information. Information is the blood of science. Without information, science cannot develop and live. Without information, research would be useless and knowledge would not exist. Precious fluid, continuously produced and renewed, information only matters if it circulates, and above all, it circulates freely (LE COADIC, 2004, p. 27).

With the advent of the Internet and the emergence of information technologies, both the oral process and the written, formal or informal process have undergone some changes and the consequent shortening of these processes. Thus, a new category of scientific communication is established, the so-called electronic communication (OLIVEIRA; NORONHA, 2005).

Despite the evolution and major changes in the forms of location and access to information, due to its formality, the scientific journal remains the main means of communication between peers and “Represents one of the vehicles that make up the final, formal, consolidated product. dissemination of research results by scholars from around the world.” (BAPTISTA et al., 2007, p. 3).

For Faiella (2017), scientific journals are collections, usually written by scholars and specialists in specific areas for an audience whose readers must have specialized knowledge. These journals are usually specialized in different subjects and areas, with increasingly specific themes, but can also be multidisciplinary, interdisciplinary or related to a broad area. They are also called journals due to the fact that they are published periodically (monthly, quarterly, half yearly, yearly etc.). They constitute one of the main publishing channels for academic research, one of the most prominent forms of scientific communication used to advance the progress of science and disseminate research results. They contain academic articles, categorized according to the type of information they provide, such as: original articles/essays, experience reports, ongoing or completed research articles, essays, book reviews, dossiers.

Regarding the form of access, a relevant issue regarding the dissemination of information via the Internet to electronic journals, there are two main ways: restricted access electronic journals, which to have access to its content, the user must pay for the subscription of the periodic; purchase the article individually or obtain access licenses through specialist distributors and publishers. Open access electronic journals relate to the Open Archives Initiative (OAI) and the Open Access Movement, both of which aim to offer free and open access to scientific information (MÁRDERO ARELLANO; FERRERIA; CAREGNATO, 2005).

Thus, from the perspective of adherence to electronic scientific journals:

[...] “Based on the open access model, the dissemination of scientific research is significantly expanded, contributing [...] to increase its visibility and the progress of science. The use of systems for journal management based on the OAI model contributes to the so-called golden way, which refers to the publication of articles in open access journals”. (MEIRELLES, 2009, p. 63).

Given the above, it is observed that the scientific journal plays a fundamental role in scientific communication, in which in addition to having a rigor to be identified as scientific, should follow standards to determine its quality. The literature shows that, despite some evolution over time, the flows for publication remain practically the same, although despite being published electronically, there has been a significant improvement in the way of communication between publishers and authors, but there is Still a long time to wait for the publication of the scientific article. In the following section, the editorial process of the scientific journal will be described, showing its evolution and its present form.

3 The Editorial Process of Scientific Journals

Reis and Giannasi-Kaimen (2007) mention that, with the emergence of electronic journals, media can be differentiated into two types: print and electronic. In the electronic scientific journal, the same criteria established for the printed matter are used, with the same structure, which should contain: ISSN number; Title; Cover (Layout); Office hour; Summary; Abstracts and Articles (PDFs). What sets them apart is the support.

With the use of electronic support, the publication of all types of bibliographic material appeared more frequently, since it was easy to transmit, send, receive and change the initial format of the document (BORBA; COSTA; MARTINS, 2006, p. 5). This leads to “[...] the editors of scientific journals gain time, financial and human resources, because electronic mailings facilitate their receipt, sending to reviewers and their return to authors.” (FACHIN; HILLESHEIM; RADOS, 2006, p. 52).

Gruszynski, Golin and Castedo (2008, p. 3) mention that the main changes in publishing occurred:

Since the 1970s, advances in desktop publishing have been able to bring greater quality and speed in publishing. Between attempts to computerize the entire editorial process [...]. The big change, however, comes from the 1990s with the onset of electronic transmission of articles via the Internet. The genesis of electronic scientific journals is linked to the communication that took place through letters (e-mails) and small directed newspapers (newsletters), which gradually shifted to the electronic medium.

The advantages cited by the publishers with the migration of the print journal to the electronic one, was the change in the distribution and visibility of the editions, and regarding the editing process, they report that as facilitators the use of publishing software, information exchange via email or electronic availability of the content created, but mainly the use of this technology in the creation of new models of communication of scientific information (GRUSZYNSKI; GOLIN; CASTEDO, 2008).

Ferreira (2014) mentions that the editorial process of scientific journals is similar in different areas of knowledge. In general, this process includes the following steps: article preparation, journal selection and submission, evaluation by reviewers and editor, decision to approve or reject the article, as well as the editing, publication and dissemination processes.

Involved in this process are mainly: the author (s), the editor (s) and the reviewers.

Table 1 presents the main tasks performed in the editorial process, according to the work of Elson and Brouard (2012).

Chart 1. Summary of tasks in the editorial process

| | Responsabilidade | | |
|--|------------------|--------|-----------|
| | Autor | Editor | Avaliador |
| Plan and do the research | X | | |
| Select the journal | X | | |
| Review guidelines for journal authors | X | | |
| Write the article | X | | |
| Present at events, universities, lectures etc. | X | | |
| Submit to journal | X | | |
| Receive article | | X | |
| Make the decision (Reject - Request adjustments / review before submitting to reviewers - Submit to reviewers - Accept) | | X | |
| Receive rejection or request for adjustments | X | | |
| Resubmit for the journal | X | | |
| Select evaluators | | X | |
| Read, review article, write opinion and submit opinion | | | X |
| Receive advice, analyze and consolidate analysis | | X | |
| Make decisions based on advice and self-reading | | X | |
| Decide (Reject - Request Review Based on Opinions - Accept with or without Modifications) | | X | |
| Receive feedback from editor and reviewers | X | | |
| IF REJECTED - reevaluate article | X | | |
| Review opinions | X | | |
| Prepare the review | X | | |
| Resubmit the revised article and letters to the editor and each reviewer with detailed explanation of changes | X | | |
| Receive revised article and explanatory letters | | X | |
| Analyze explanations received and changes actually made | | X | |
| Decide (Reject - Request reassessment by reviewers - Request minor additional modifications - Accept) | | X | |
| If the editor submits for re-evaluation: - Analyze the explanations received and the changes actually made - Write the opinion and send to the author and editor | | | X |
| Receive opinions, analyze and consolidate them | | X | |
| Form opinion based on opinions and self-reading | | X | |
| Make final decision | | X | |
| Receive feedback from reviewers and editor | X | | |
| Receive decision (celebrate if accepted, reevaluate if rejected) | X | | |
| Track review and edit | | X | |
| Publish the article | | X | |
| Disseminate the article in the community | X | X | |

Source: Prepared by the authors, 2019, adapted from Elson and Brouard, 2012.

Research results by Silva and Dobra'nszki (2017), Chen et al. (2013), Kalcioglu et al. (2015), Björk and Solomom (2013) state that publishing in scientific journals usually entails long delays from submission to publication.

As an alternative to the lengthy time of publication of the scientific article, Packer (2014, p. 18) suggests two innovations in the process of scientific communication that can accelerate the process of publication of the scientific article. One is the publication of the article individually, which, once approved after peer review, editorial process and layout, are published within numbers and volumes to meet the management of bibliographic references and digital preservation of archives. The second innovation is “[...] the obligatory availability of data used in searches in web repositories, [...] in order to facilitate the reproducibility of searches and the reuse of data in other searches.” The author presents these two alternatives as a passive solution to be applied in the case of Brazilian journals.

In the next section, lean thinking will be presented as an alternative to redesigning the editorial flow of scientific journals, aiming at reducing the time from the submission of the article by the author to its publication by the journal editor.

4 Lean Thinking

Lean thinking, based on the Toyota Production System, aims to eliminate waste of organizational resources that, according to Greef, Freitas and Romanel (2012, p. 60), “[...] is a management philosophy that identifies and comprises activities performed in any process, knowing how to differentiate the waste of value from the perspective of users and customers from the results of the same processes.” So lean thinking applies to organizations as a whole and not just to production systems to meet external and internal customer expectations about the process. For Womack and Jones (1998) “[...] lean thinking is lean, because it is the way to do more with less and less.” Lean thinking is treated as an antidote to waste.

Lean techniques and tools, if applied systematically and in the right situations, continually improve business performance and eliminate waste. Some of them may be applied in the development of the editorial process of the scientific journal, among them the value stream mapping (MFV).

“A value stream is all the action (adding value or not) needed to bring a product to all the essential flows to each product.” (ROTHER, SHOOK, 2003, p. 3). The value stream encompasses the initial activities for the development of any product, which can be from conception to delivery to the end user.

Already the MFV is a qualitative tool, which happens from the design of each process, the visual representation, in the flow of material and information. Thus, through MFV, you can identify unnecessary processes and eliminate them. According to Womack and Jones (1998), MFV can be done by performing three steps:

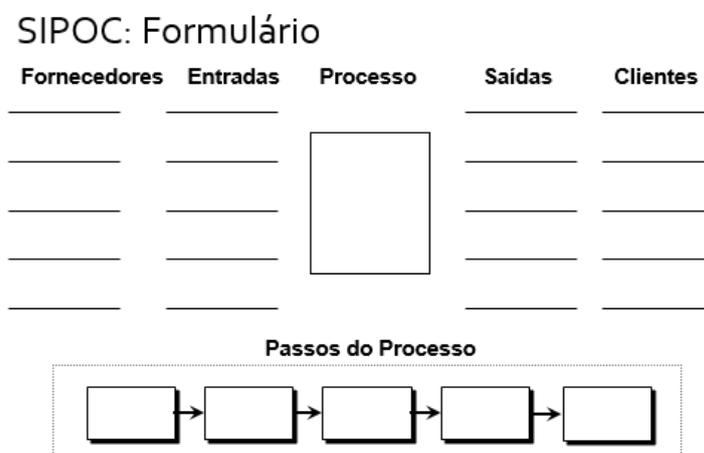
a) Current state mapping: In the current state mapping, the tasks performed by the company are identified. The time required for its execution is raised and it is identified whether or not the task adds value to the flow;

b) mapping of the future state: from the current mapping, one should exclude / adjust the tasks aiming to eliminate the waste of resources;

c) action plan: this step describes the actions (what to do, when to do it, why to do it, who will do it, how it will do it and how much it will cost) to achieve the future state.

What can contribute to the creation of the value stream map is the form SIPOC1. This technique will visibly convey who the suppliers are, identify the inbound and outbound processes and who the customers are. Through the SIPOC form, it will be possible to identify which processes are interconnected and how information flows between one process and another (LOCHER, 2011). Figure 1 shows the illustration of a SIPOC form.

Figure 1. SIPOC Form Template



Source: Petenate, 2012, p.1.

For current state map design, lean metrics are the means that will help the company achieve lean goals. Table 2 describes some metrics defined by Keyte and Locher (2004) that will be applied to the current state design and its meaning.

Table 2. Lean Metrics Applied to Administrative Processes

| Metric | Meaning |
|-------------------------------|--|
| Cycle Time (T / C) | It is the real time it takes to complete a process or activity. Staff can usually quantify process time by observation. |
| Standby Time (T / E) | It is the time it takes to switch from one activity to another. |
| Total lead time | It is the sum of the cycle times and waiting time of the entire process. |
| Accuracy (% C & A) | It is a process quality metric used to describe how often information received from an activity is complete and accurate from the recipient's point of view. |
| Inventory | Represents the information queue waiting to be processed. |
| Number of people | Number of people responsible for performing an activity. |
| Information Technology | Describes the software tools used to assist in processing information in each process box. |

Source: Prepared by the authors, 2019, from Keyte and Locher, 2004.

To eliminate activities that do not generate value, waste in the execution of processes should be identified. Tapping and Shuker (2010) describe seven “deadly” wastes because they are considered toxins in the workplace, these wastes are described in Table 3.

Box 3. The Seven Lean “Deadly” Wastes

| Waste | Meaning |
|-----------------------|--|
| Overproduction | [...] when you produce something else or produce it before it is needed. |
| Wait | It makes work stop, generating downtime for employees. In the office, waiting can be for subscriptions, machines, supplies |
| Overprocessing | It is linked to the processing of things that do not add value to what is being produced. |
| Stock | It can be characterized by over-purchasing of materials and other resources or by excess-in-process materials that will result in large end product inventory without demand for the customer. |
| Movement | It is the waste that results from defective work that needs to be redone. |
| Defects or correction | Which causes the interruption of a process to deal with corrections and rework. |
| Transport | It is associated with unnecessary movement of materials, tools or equipment. |

Source: Prepared by the authors, 2019, from Keyte and Locher, 2004.

To design the future state of the value stream, lean administrative tools should be identified as a way of ensuring customer satisfaction, establishing a continuous workflow and evenly distributing work (TAPPING; SHUKER, 2010).

5 Methodological Procedures

The characterization of the research is related to the methodological and operational procedures that define how the data will be collected, analyzed and treated to solve the research problem. For such, the research will be characterized as for the strategy, its purpose, nature of the variables and objectives.

The strategy is characterized as a case study, as it consists in the analysis of the editorial process of a scientific journal. The choice of the journal studied was due to the convenience, ie the availability of editors, secretary and editorial producer to be accessible for the research to be applied, as well as the physical proximity of the authors to data collection. We chose not to mention the name of the magazine.

As for the objectives, the research is descriptive and exploratory. It is exploratory because it seeks to know a little more about the thematic approached that through exploratory study deepens preliminary knowledge about a given subject in order to contribute to the clarification of questions or to construct other important questions to conduct the research (RAUPP; BEUREN, 2003).

As for its purpose, it is characterized as applied research by the fact that its main motivation is to solve an immediate and real problem: to optimize the publication time of a

manuscript by applying lean concepts in the context of the editorial process of the scientific journal. studied.

The technique used for data collection was systematic observation, which was performed to draw the editorial flow of the journal selected for the study to verify how the activities develop and to perform the timing of the cycle times of each activity. For activities that are performed outside the journal's environment, service providers were asked via email to measure and indicate cycle times. The wait times for these manuscripts were identified through the OJS platform history. Systematic observation has provided input for Value Stream Mapping (MFV) of the current state.

6 Lean Office Applied to the Editorial Process of Scientific Periodic

The lean office employed in the editorial process of the scientific journal was the approach applied because it is the electronic information flow that at the end of the process generates a product, that is, the published article. This section will feature the journal studied, its editorial process, and how lean thinking has been employed to make it more agile and simple by reducing or eliminating waste.

6.1 Characterization of the reviewed journal

Magazine A is linked to the Graduate Program of a public University located in Florianópolis / SC and other cities in the state of Santa Catarina. With a focus on History, the journal is edited solely in electronic media and uses the OJS 2.2.3.0 Electronic Journal Publishing System, an open source journal management and publishing system developed with support and freely distributed by the Public Knowledge Project (PKP), under the General Public License (GNU) license. Since 2014, it is published quarterly. Since the beginning of the publication, the periodicity adopted has been strictly respected. In its editorial and advisory board, the magazine has researchers in the area - Brazilians and foreigners - who excel in the production of knowledge.

In 2016, the magazine moved to stratum A2 (in History). It is characterized as a national and international journal, publishing articles in Portuguese, Spanish, French and English. It is open access and has a continuous flow to receive new article submissions, reviews, translations and unpublished documents.

6.2 The editorial process of the reviewed journal

Manuscripts are submitted by the authors on the OJS platform, they are received by the editorial producer who copies title, subtitle, author (s), title, institutional affiliation and abstract to submit by spreadsheet for pre-analysis. The pre-analysis is performed by the editor-in-chief who makes the first manuscript evaluation by reading the abstract, in order to appreciate its contribution regarding the content and its adequacy to the journal's editorial policy.

Subsequent to this stage, the editor-in-chief reports to the editorial producer if the manuscript has been rejected or accepted for evaluation. If accepted, he is nominated by two ad hoc evaluators.

After the manuscript review has been returned by the two ad hoc reviewers, the selection editor and the editor-in-chief review the opinions issued and proceed with the following referrals: if one of the reviewers indicates the manuscript for publication and the other rejects it, the Editorial producer asks editor-in-chief to appoint a third reviewer. If the manuscript has two opinions that indicate approval, the editorial producer forwards the authors for adjustments. In the case of two negative opinions, the manuscript is rejected.

Following the reviews requested by the reviewers, the manuscript is sent by the editorial producer who passes it to the text editor and layout for the text editing.

After returning from text editing, the manuscript is sent to the librarian to perform text normalization, citations and references according to the Brazilian Association of Technical Standards (ABNT).

After returning to the editorial producer, the manuscript is sent to the authors for text editing validation and standardization. After validation, the manuscript returns to the editorial producer, who configures the layout and sends it back to the author (s) for proof reading.

After endorsement of proof reading by the author (s), the editorial producer inserts number of pages, assigns the DOI and schedules the edition in which the manuscript will be published.

6.2.1 Identification of the flow in the value chain and creation of the reviewed journal MFV

The identification of the value stream was performed using the SIPOC² technique. In the SIPOC of the studied journal, presented in Table 4, the suppliers, inputs, processes, outputs and internal customers of each process were indicated.

Table 4. SIPOC of the reviewed journal

| Provider | Input | Process | Output | Client |
|--------------------|---|---|--|--------------------|
| Author (s) | | Submit the manuscript | Manuscript submitted | Editorial Producer |
| Editorial Producer | Manuscript submitted | Receive submission and prepare spreadsheet with manuscript data | Approved documents and author and manuscript data provided by the editorial producer | Editorial Producer |
| Editorial Producer | Check submission documents and prepare spreadsheet with manuscript data | Prepare spreadsheet with manuscript data | Spreadsheet with title, author (s), title, affiliation and abstract | Boss Editor |

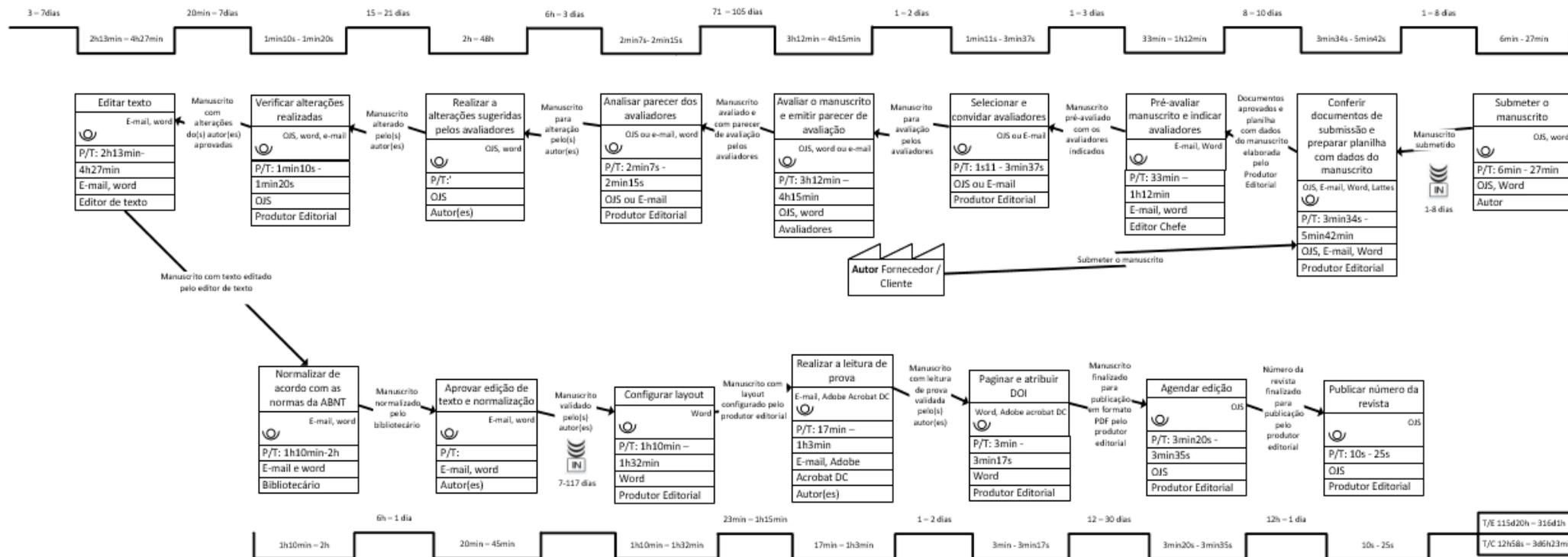
² The acronym SIPOC comes from the English terms: Suppliers, Inputs, Process, Outputs, and Customers (PANDE; HOLPP, 2002).

| Provider | Input | Process | Output | Client |
|---------------------------|---|---|---|-----------------------------------|
| Editor | Spreadsheet with title, author (s), title, affiliation and abstract | Pre-evaluate manuscript and appoint reviewers | Pre-evaluated manuscript indicating reviewers | Editorial Producer |
| Editorial Producer | Pre-evaluated manuscript indicating reviewers | Select and invite reviewers | Evaluation manuscript | Appraisers |
| Appraisers | Evaluation manuscript | Evaluate the manuscript and issue evaluation opinion | Manuscript evaluated and evaluated by the reviewers. | Editorial Producer |
| Editorial Producer | Manuscript evaluated and evaluated by the reviewers. | Review the opinion of the evaluators | Manuscript for modification by the author (s) | Author (s) |
| Authors | Manuscript for modification by the author (s) | Make changes suggested by evaluators | Manuscript modified by the author (s) | Editorial Producer |
| Editorial Producer | Manuscript modified by the author (s) | Check Changes Made | Manuscript with author (s) changes approved by the editorial producer | Text editor |
| Text editor | Manuscript with author (s) changes approved by the editorial producer | Edit text | Manuscript with text edited by text editor | Librarian |
| Librarian | Manuscript with text edited by text editor | Normalize to ABNT standards | Standard manuscript by the librarian | Author (s) |
| Author (s) | Standard manuscript by the librarian | Approve ABNT text editing and normalization | Manuscript validated by the author (s) | Editorial Producer |
| Editorial Producer | Manuscript validated by the author (s) | Configure layout | Manuscript with layout configured by the editorial producer | Author (s) |
| Author (s) | Manuscript with layout configured by the editorial producer | Perform proof reading | Manuscript with proof reading validated by the author (s) | Editorial Producer |
| Editorial Producer | Manuscript with proof reading validated by the author (s) | Page and assign DOI | Manuscript finalized for publication by the editorial producer | Editorial Producer |
| Editorial Producer | Manuscript finalized for publication by the editorial producer | Schedule edition | Magazine number finalized for publication by the editorial producer | Editorial Producer |
| Editorial Producer | Magazine number finalized for publication by the editorial producer | Publish magazine number | Published Magazine | Author (s) Readers Magazine |

Source: Prepared by the authors, 2019.

Through the SIPOC, it was possible to build the current MFV, as shown in Figure 2. It should be noted that, to elaborate the MFV, it was necessary to go to gemba, that is, to verify how the service develops and to perform the timing of each time. activity.

Figure 2. MFV of the current state of the reviewed journal



Source: Prepared by the authors, 2019.

Once the MFV of the current state was created, its analysis was performed based on the established metrics, as presented in Table 5.

Table 5. MFV analysis of the current state of the reviewed journal

| Processes | Activities | | | Metrics | | | Resources | |
|--|------------|-----|------|-------------------------------|----------|---------------------------|--------------------|-------------------------|
| | AV | NAV | N/ D | Cycle time | Stock | Waiting time | People | Tech |
| Submit the manuscript | X | | N | 6 min - 27 min | 1-8 days | 18 days | Author | OJS, Word |
| Check submission documents | X | | N | 34 min - 1 min 42s | | | Editorial Producer | OJS, Word |
| Prepare spreadsheet with manuscript data | | X | D | 15 min - 17 min | | | Editorial Producer | Word |
| Pre-evaluate manuscript and appoint reviewers | X | | N | 33 min - 1 h 12 min | | 8h-10 days | Boss Editor | Email, Word |
| Select and invite reviewers | X | | N | 1 min 11 sec - 3 min 37 sec | | 13 days | Editorial Producer | OJS or Email |
| Evaluate the manuscript and issue evaluation opinion | X | | N | 3 h 12 min - 4 h 15 min | | 71-105 days | Appraisers | OJS or Email, Word |
| Review the opinion of the evaluators | X | X | N | 2 min 7 sec - 2 min 15 sec | | 6 h - 3 days | Editorial Producer | OJS, Word |
| Make changes suggested by evaluators | X | | N | 2 h - 2 days | | 15 days - 21 days | Author (s) | OJS, Word |
| Check Changes Made | | X | N | 1 min 10 sec - 1 min 20 sec | | 20 min - 7 days | Editorial Producer | Word |
| Edit text | X | | N | 2 h 13 min - 4 h 27 min | | 3 - 7 days | Text editor | Email, Word |
| Normalize to ABNT standards | X | | N | 1 h 10 min - 2 h | | 6 h - 1 day | Librarian | Email, Word |
| Approve ABNT text editing and proofreading | | X | N | 20 min - 45 min | | 7 days-117 days | Author (s) | Email, Word |
| Configure layout | X | | N | 1 h 10 min - 1 h 32 min | | 23 min - 1 h 15 min | Editorial Producer | Word |
| Perform proof reading | | X | N | 17 min - 1 h 3 min | | 12 days | Author (s) | Email, Adobe Acrobat DC |
| Page and assign DOI | X | | N | 3 min - 3 min 17s | | 12 days - 30 days | Editorial Producer | Word |
| Schedule edition | | X | N | 3 min 20s - 3 min 35s | | 12 days | Editorial Producer | OJS |
| Publish magazine number | X | | N | 10 sec - 25 sec | | | Editorial Producer | OJS |
| Totals | | | | 12 h 58 s - 3 days 6 h 23 min | 1-8 days | 115 days 20 h - 316 d 1 h | | |

Source: Prepared by the authors, 2019.

Caption: AV - Adds Value; NAV - Does not add value; N - Required; D – Unnecessary

6.2.2 Identification of waste in the editorial process of the reviewed journal

By observing processes from a lean perspective, according to Tapping and Shuker (2010), waste was identified as described in Table 6.

Table 6. Waste in the editorial process of the Journal

| Waste Type | Process | Time |
|-----------------------|---|-----------------------------|
| Wait | Check submission documents and prepare spreadsheet with manuscript data | 8-10 days |
| | Evaluate the manuscript and issue evaluation opinion | 71 h-105 days |
| | Make changes suggested by evaluators | 15 days - 21 days |
| | Page and assign DOI | 12 days - 30 days |
| Overprocessing | Prepare spreadsheet with manuscript data | 15 min - 17 min |
| | Check Changes Made (Editorial Producer) | 1 min 10 sec - 1 min 20 sec |
| | Perform the proof reading (Author (s)) | 17 min - 1 h 3 min |
| Stock | How long the manuscript waits for the submission of papers to await the arrival of two or three more manuscripts | 1 to 8 days |
| Stock | Time after approval of ABNT text editing and proofreading that manuscript is in inventory awaiting layout configuration near volume publication | 7 days-117 days |

Source: Prepared by the authors, 2019.

The evaluation process is the biggest problem reported by the journal studied, in which the evaluator, besides taking a long time to return with the evaluation, some are unavailable or accept the manuscript and do not return with the evaluation. Difficulties in locating reviewers for certain subjects have also been reported.

In a general analysis of the current MFV, some activities have overprocessing like many user conferences. Although the process of publishing the scientific journal is considered different because information conferences are necessary for the security and control of what will be published in the final product, they point out weaknesses in the process.

Based on the current MFV, some opportunities for improvement were identified, presented in Table 7, which will make the editorial process leaner, which consequently will provide greater efficiency to the end-user process - authors, readers and editors.

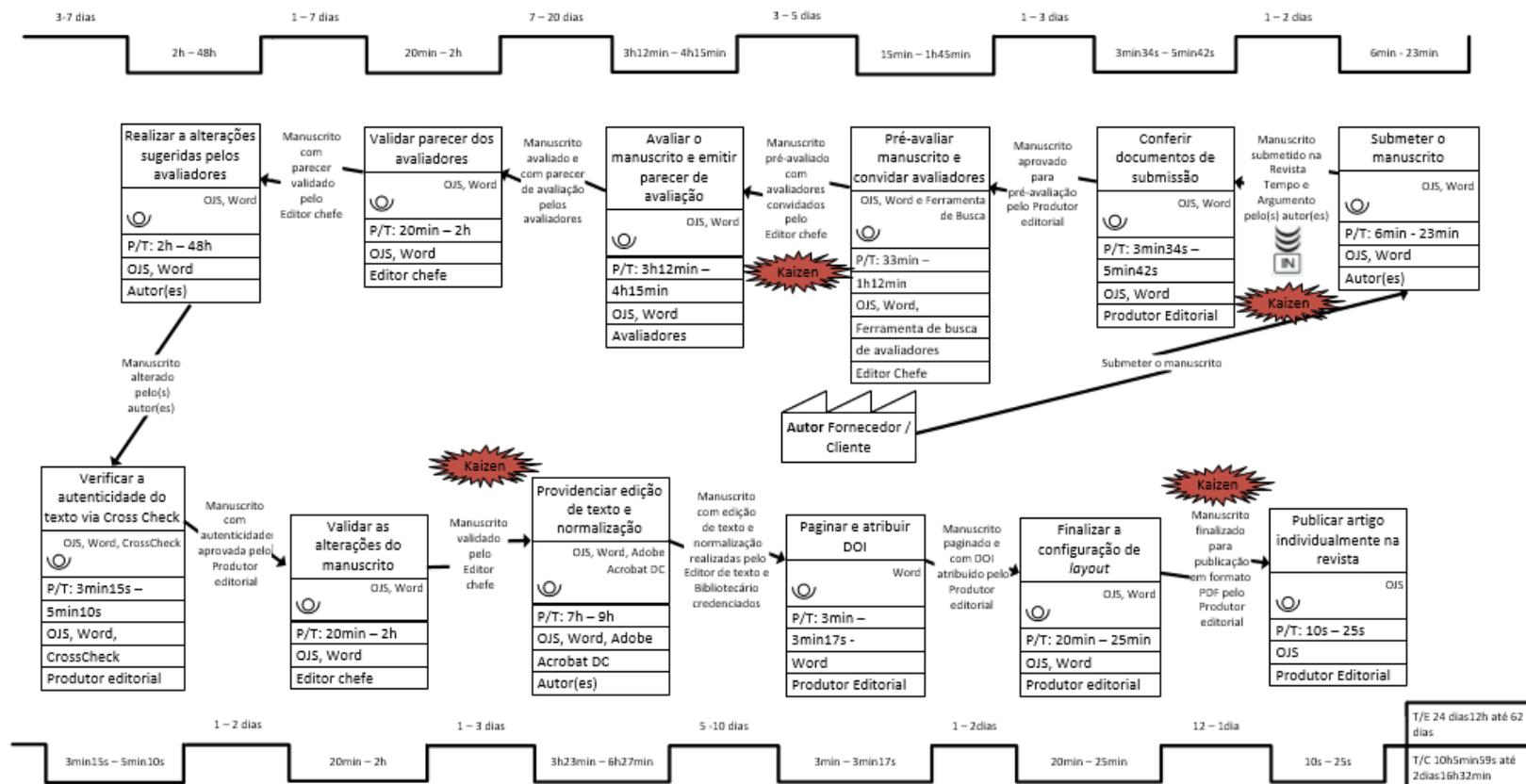
Table 7. Improvement Opportunities

| Process | Person | Improvement opportunity |
|--|--------------------|--|
| Follow-up of all stages of the editorial process by the author (s) | | Implement on the platform the signaling of the phase in which the manuscript is in the editorial process so that the author (s) can follow each step. |
| Indicate the activity to be performed by the internal vendor | | Implement on the platform the visual signal that will indicate the process he should perform and will do it more intuitively. |
| Submit the manuscript | Author | Significantly reduce the time the manuscript will be in stock |
| Prepare spreadsheet with manuscript data | Editorial Producer | Delete this step - all process control via OJS tool |
| Pre-evaluate manuscript and appoint reviewers | Boss Editor | Evaluator Bank prototype plug-in that will contribute to the rapid and effective localization of the largest number of reviewers for the manuscript |
| Select and invite reviewers | Editorial Producer | This process will be performed by the editor-in-chief along with the manuscript pre-assessment in the previous stage of the process. |
| Standardize assessments | Appraisers | Reduce the variability of evaluation opinions by providing evaluation forms to avoid very discrepant opinions. |
| Validate changes from author (s) | Boss Editor | This process was included because it is understood that at this stage of the process there is a need for validation by the editor-in-chief, not just the editorial producer. |
| Edit text | Text editor | This process will be performed by the accredited text editor (author responsibility). |
| Normalize to ABNT standards | Librarian | This process will be performed by the accredited librarian (author responsibility) |
| Approve ABNT text editing and proofreading | Author (s) | Delete this step |
| Perform proof reading | Author (s) | Delete this step |
| Schedule edition | Editorial Producer | Delete this step |

Source: Prepared by the authors, 2019.

Based on the possibilities for improvement, an MFV of the future state of the editorial process of the journal studied was designed, as described in Figure 3.

Figure 3. MFV of the future state of the analyzed journal



Source: Prepared by the authors, 2019.

In the future state MFV, the total T / C will be 10 h 2 min 44 s up to 2 days 16 h 27 min and the T / E 23 days 12 h up to 60 days with a total Lead time of 23 d 22 h 44 s up to 62 days 16 h 27 min.

In Table 8 one can compare the current flow with the future flow, from the perspective of saving time.

Table 8. Comparison of current and future MFV times

| | Actual MFV | Future MFV |
|-----|----------------------------|---------------------------------------|
| T/C | 12 h 58 s – 3 d 6 h 23 min | 10 h 2 min 44 s until 2 d 16 h 27 min |
| T/E | 115 d 20 h – 316 d 1 h | 23 d 12 h until 60 d |

Source: Prepared by the authors, 2019.

As can be seen in Table 8, there is little variation in Cycle Time. Processes that were deleted or improved did not have much impact, but the lead time between processes was considerably reduced. The interval went from 115 days 20 h to 316 days 1 h to 23 days 12 h to 60 days, indicating a reduction in the minimum time of 92 days and 256 days in the maximum time, showing a considerable decrease in the time of publication of the manuscript. will have a maximum projection of 23 days to 62 days to be published.

7 Final Considerations

This paper aims to analyze the editorial process of a Brazilian scientific journal, aiming, based on Lean philosophy, to make it simpler and more agile, promoting the reduction of the time spent from the submission of a manuscript to the publication of the article by the journal.

It can be observed that in the study of the editorial process that the journal does not adopt the figure of the section editor, being the activity of pre-evaluation and validation of the evaluation processes and changes of the authors by the editor-in-chief, which may cause a work overload. Regarding the steps of the editorial flow, the submitted manuscripts go through the verification of the submission, pre-evaluation, evaluation, validation of the evaluation process, authors' changes and editing (text editing, standardization, translation, DOI, layout) and publication of the manuscripts. articles in the same volume in PDF format.

By designing the Value Stream Mapping (MFV) of the current state of the journal studied, the process flows involved in the value chain were identified with inventory identification, Cycle Time, Waiting Time, people and technology involved. This flow description resulted in the identification of total lead time from 116 d 8 h to 319 d 1 h 23 min.

The main wastes found in the studied magazine were the waiting time and over processing. The most significant wait time identified was in the evaluation process and internal queues due to volume publication. This allows some activities to be carried out in batch by the editorial producer and secretary or editor in chief. Over processing occurs mainly with too many conferences by both the journal (editors) and the authors themselves. Too many conferences indicate process failures. This action suggests that the person who

previously performed it is not able to perform the activity safely. As for conferences, in the case of the scientific manuscript, it requires a great deal of rigor in what is being performed in order to be sure of what will be published, both as regards the reliability of what the author has written and whether he has performed what has been written. suggested. For this reason, some conferences could not be excluded from the process, but otherwise could be improved.

After identifying opportunities for improvement, the future MFV was built, eliminating waste in the perception of end customers. According to the future state MFV, the total lead time achieved was from 23 days to 62 days. The lead time obtained suggests the effectiveness of applying lean thinking in the editorial process of scientific journals. It is now intended to apply Lean in other journals, with different Qualis, from different areas of knowledge, with different modus operandi, in order to propose a reference editorial model for open access Brazilian scientific journals.

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