

Mapping and Redesign of Administrative Processes with BPM and User Journey: An Experience Report for Digital Transformation

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Abstract

Context: Companies' Digital Transformation (DT) intensified during the Covid-19 pandemic, involving the digitization of processes and cultural adaptation for continuous innovation, increased productivity, and service quality. The interaction of people, procedures, and technologies is crucial in this process. **Problem:** Traditional organizations with rigid cultures rely on outdated procedures, hindering the adoption of more efficient work practices. **Solution:** This research explores the use of the Business Process Management (BPM) life cycle to improve three processes in a Brazilian company, integrating user journey to improve processes towards DT. **IS Theory:** This study is carried out under the Socio-Technical Theory, examining the interaction between people, processes, and technologies to achieve balanced and effective digital transformation. **Method:** This exploratory research carries a qualitative experience report of the mapping and redesign of business processes of a countryside unit from "Alpha", a Brazilian vocational education organization. **Summary of Results:** Three financial processes were mapped, analyzed, and redesigned with the use of BPM and user journey map. The improvement proposals were based on the problems and opportunities identified in the processes. Changes in systems and innovative actions were proposed within the company to enhance process efficiency and agility through digital transformation. **Contributions and Impact in the IS area:** This study reports one execution of a BPM process integrated with user experience techniques aimed at DT. Through the lens of the Socio-Technical Theory, the research presents steps taken into the mapping, analysis, and redesign of processes contributing in similar contexts for both practitioners and researchers in the Information Systems (IS) field.

CCS Concepts

• **Applied computing** → **Business process modeling**; • **Information systems** → *Enterprise information systems*.

Keywords

Digital Transformation, Process Design, User Journey, Case Study, Digital Culture, Digitization, BPM, Organizational Culture

1 Introduction

In recent years, technological advances and the creation of new digital technologies have profoundly transformed the organizational landscape. The COVID-19 pandemic has intensified this process, forcing many organizations to rapidly digitize their systems and automate processes to adapt to the new context [23]. This acceleration in Digital Transformation (DT) has redefined the way companies manage their resources and produce goods and services, seeking greater productivity, efficiency, and quality in customer delivery [24], enhancing research within the information systems (IS) context.

Digital transformation can be defined as a process that aims to create an environment favorable to the transformation of the culture and operational procedures of an organization [28] through information, computing, communication, and connectivity technologies [20]. Carroll [8] differs DT from 'digitization', where the first enables innovation and the creation of new strategies for an organization. At the same time, the other refers to applying technologies to increase efficiency.

From another perspective, Business Process Management (BPM) focuses on managing chains of events, activities, and decisions that add value to an organization and its customers [10]. When applied to the context of DT, BPM is seen as a driving force for

innovation by aligning organizational processes with digital goals, enhancing efficiency, and integrating emerging technologies [26]. By re-engineering processes through the lens of digital capabilities, organizations can achieve greater agility, responsiveness, and innovation [26, 29].

Based on the Socio-technical Theory, this study considers the interaction between social systems (people, organizational culture) and technical systems (technology, processes) as essential for the success of organizational changes. In this context, DT is not only a technological issue but also a cultural one, requiring structural and behavioral changes to align employees with new digital paradigms[32]. It becomes crucial to explore the relationship between organizational culture elements and DT to understand how to create an environment that fosters the acceptance and implementation of technological innovation.

Therefore, the study aims to investigate the difficulties in organizational processes through BPM and user journey, encompassing mapping and proposing improvements to low-automated processes by means of digital transformation. The specific objectives include: (i) Identifying in the literature the cultural characteristics that favor or hinder DT; (ii) Analyzing and mapping current processes of a company in a real context, focusing on the user journey, to identify obstacles and inefficiencies. (iii) Proposing improvements and adjustments to the process, considering the technologies already used by the company and emerging technologies, to optimize the workflow and improve the user experience. Hence, we seek to answer the following research questions (RQ):

- RQ1: How are the company's current processes structured and what are its main steps?
- RQ2: What obstacles and inefficiencies can be identified in the current processes?
- RQ3: How do the technologies already used by the company influence the efficiency of the processes and the user experience?
- RQ4: What improvements can be proposed to optimize the processes, considering the User Journey?

Although digital transformation is an emergent hot topic in theory and practice, companies still struggle to conquer sufficient digital maturity. The scientific contribution of this work for IS research lies in the practical execution of a DT process by providing a case of mapping and redesigning organizational processes in a business context. In addition to its practical relevance, the study offers an integrated approach, contextualizing with cultural and technological dimensions influencing digital transformation.

The paper is structured as follows. We first present our literature review (Section 2) with a set of terms and studies providing an overview of how Socio-technical Theory and organizational culture elements influence digital transformation, which concepts we use throughout the paper. Subsequently, we discuss the design of our case study (Section 3). Section 4 presents the results of this paper, making explicit the mapped process, the use of User Journey to identify problems in the process, the redesigning of the process, and the evaluation of the works. Lastly, in Section 5, we conclude with a summary of our results, our impact and implications, as well as limitations and future works that could derive from this research.

2 Background and related works

Socio-technical Theory highlights that organizations comprise two interdependent subsystems: (i) the social subsystem, encompassing people, culture, and values, and (ii) the technical subsystem, involving technologies and processes aimed at achieving goals [2]. This theory underpins interventions integrating technological and social changes for sustainable results [2].

Organizational culture can be explored from multiple facets, and research in the area varies according to the unit of analysis. The article by Ashrafi et al. [4] determines five research trajectories in organizational culture: (i) **digital technology architectures**; (ii) **digital business models & new forms of value creation**; (iii) **new organizational forms enabled by digital technologies**; (iv) **digital technology affordances and the relationality of work practices**; and (v) **the role of organizational identity, culture, and leadership in digital transformation**. This study focuses on the fourth trajectory, examining how work practices and actor perceptions evolve with digital technology use during the BPM process.

For Schein [27], organizational culture arises from challenges in adapting externally and integrating internally. The author also highlights the challenge of initiating change due to resistance to learning and the need to "unlearn" old habits, emphasizing the role of leaders in fostering experimentation. Similarly, Kimura et al. [19] note that organizational culture and work structures shape employees' adaptability to new technologies.

The term 'Digital transformation' lacks a unified definition due to its novelty, with varying interpretations. Vial [30] describes it as "a process that improves an entity through significant changes using information, computing, communication, and connectivity technologies". Hess et al. [15] focus on changes to business models, products, structures, and automation, while Henriette et al. [14] view it as a technology-driven shift in business models across society. Dimensions within the scope of BPM, such as continuous improvement and process innovation, positively support digital innovation capabilities [9]. This work adopts a socio-technical perspective, viewing digital transformation as a process fostering cultural and operational shifts through digital technologies [20, 28].

Acknowledging the broad nature of digital transformation definitions, Carroll [8] highlights the need for deeper analysis of its dimensions, including technology use, value creation, structural and financial changes, digital leadership, agile operations, customer service innovations, and digital artifacts.

In the digital transformation (DT) context, the Theory highlights how cultural and social factors can facilitate or hinder technology adoption. Organizational culture shapes employee responses to change, strategic alignment, and adaptability to digital realities [8]. According to literature [7, 8, 13, 17, 30, 31], we can resume the key cultural factors influencing DT success include:

- **Agility and flexibility:** Adaptability to change, openness to innovation, and rapid response to market demands.
- **Alignment with organizational values:** DT aligned with values and mission enhances outcomes.
- **Digital leadership:** Leaders fostering a digital mindset, innovation, coaching, and empowerment embodying cultural values.

- **Cross-functional collaboration:** Enhanced communication and cooperation across departments via technology.
- **Continuous learning and development:** Encouraging skill development and adaptability for embracing new technologies.
- **Resistance to change:** Cultural barriers or employee resistance causing inertia.
- **Innovative environment:** Promoting safe spaces for improvement, risk-taking, and implementing new practices.
- **Relational capability:** Encouraging resource sharing and transparent network communication.
- **Ethics and information security:** Emphasizing ethical practices and data governance to build trust.
- **Digital maturity:** Employee proficiency in using digital tools in daily tasks.
- **Employee engagement and empowerment:** Empowering employees to contribute ideas fosters ownership and supports transformation.

In the literature, it is possible to find studies that suggest that inconsistencies in the relationship between organizational culture and digital transformation may occur depending on the organizational contexts [4, 8, 19, 20, 30], indicating a need for further research in this area. Thus, our article positions itself in identifying, analyzing, and remodeling outdated processes through BPM and user journey.

Studies in the area bring similar approaches, also contextualizing the use of BPM for the digital transition. Ammirato et al.[1] contextualize digitization in the public sector, analyzing the use of BPM as a guide for decision-making in the implementation phase. In addition, studies such as Bogéa et al.[6] focus on a primary process' redesign. Other studies present a more advanced stage of implementation and integration of advanced technology tools with processes [22]. Our study differs from these in that it reports the case of execution of the initial BPM phases of discovery, analysis, and redesign in three support processes of a countryside unit from a large company.

3 Methodology

Considering the RQs presented in section 1, this paper presents an exploratory and holistic single case study to map 3 processes and propose improvements aiming at digital transformation. The unit of analysis was the DT initiative conducted in the organization. We addressed it with a qualitative study with a positivist position from a deductive approach using: **Document analysis** such as Rules, Company Bylaws; **Semi-structured exploratory interviews** for mapping the process, assembling the user journey, identifying problems and impediments through the statements of those responsible for the task, and evaluating the redesign and proposed recommendations; **User journey** to help visualize the problems and opportunities in the processes from the users' perspectives. The methodological approach of this study was inspired by Socio-technical theory, to capture the interaction between the technical and social subsystems in the context of the digital transformation of the selected unit from Alpha.

The scope of the project involved the survey and current modeling (as is) of all processes of the selected unit. For this study, the

authors selected 3 processes: (1) Internal Purchase Requisition Service, (2) Purchasing, and (3) Accountability. The selection criteria by the authors involved three factors: (i) The propensity for digital transformation, given that the three processes lack automation and digitization, and involve many approvals and signatures; (ii) the fact that they are fundamental support processes for the execution of the unit's main processes and include many points of suggestions from employees; (iii) The interconnection inherent in the flow of information between the processes, which allows a correlation of the activities carried out, even if by different sectors.

3.1 Case and subjects selection

A team of eight researchers from the Federal Rural University of Pernambuco, including the authors, partnered to digitally transform the internal processes of a countryside unit of Alpha (a fictional name used for confidentiality). The team included four researchers: two master's students in business, one master's student in applied computing, and an undergraduate student in business. They conducted field activities, performed interviews, mapped processes, and redesigned and developed project artifacts.

In addition, the other 4 researchers are specialists, 3 with a doctorate in business acting as coordinators and facilitating communication with Alpha, and 1 with a doctorate in information technology, acting as the project manager. All of them have practical experience in projects and organizations, posing as specialists and reviewing the activities being carried by the other 4 researchers.

An anonymized company called "Alpha" in this paper was selected as our object of study. More specifically, Alpha's countryside unit was selected due to Alpha's availability to develop the projects and because it figures as a single unit that has all the sectors of a traditional organization.

The company "Alpha" is a Brazilian institution focused on vocational education and skills development in the commerce, services, and tourism sectors. The unit analyzed is located in the countryside of Pernambuco, and operates as an educational center that offers a wide range of technical courses, qualifications, improvements, and apprenticeship programs, with a focus on preparing professionals for the job market. This unit has a medium-sized structure, with approximately 100 to 150 employees, including educators, pedagogical coordinators, administrative managers, and support staff. The unit's infrastructure includes modern classrooms, technology, and professional practice laboratories, in addition to having a convention center that frequently hosts educational and corporate events.

Alpha organizes its units around the state headquarters, which is in the capital. The central headquarters coordinates strategic operations, decision-making, and resource allocation to ensure standardization and consistency of practices across all units in the state. Decisions related to budgeting, course planning, staffing, and infrastructure investments are typically made at headquarters, based on state or national analyses and priorities. This limits the autonomy of local units, which must follow these guidelines and report directly to headquarters to ensure compliance with institutional objectives.

This paper is part of a project that diagnosed organizational culture, propensity for change, knowledge, and adoption of technological tools. In general, the studied unit's organizational culture

is marked by high alignment with organizational values, low digital leadership with manual processes of signatures and approvals, and medium cross-functional collaboration, with inefficient help from the Information Technology (IT) systems to their activities. It also poses high resistance to change from headquarters, while employees are overwhelmed by activities due to the system's low adaptation. Finally, they are marked by a culture of non-agile and ineffective processes, as well as difficulty in accessing leadership and little autonomy for decision-making.

In another perspective, Alpha has adopted a widely accepted system as its enterprise resource planning (ERP) system nationwide, aiming at the integrated management of internal processes and activities across the company's sectors, such as purchasing, finance, and inventory. This tool is customizable, allowing the hiring of several useful modules for the organization (e.g. auditing, financial management, supplies, contracts, inventory, assets, etc.). In addition, it allows integration with other systems, such as Business Process Management Suite (BPMS), Business Intelligence (BI), corporate Cloud solutions, etc.

During the study, we seek data with the following actors from Alpha's departments:

- **Alpha's Headquarters IT Department:** aiming to discover and list the systems available in the company. We had contact with the manager and 2 analysts from the department, all with years of experience working in the company.
- **Unit's Finance Department:** aiming at identifying the accountability process executed in the unit and evaluating the proposed solution to its problems using DT. We had contact with the unit's analyst from the financial sector, which performs most of this process. The employee is already well-established in the company.
- **Unit's warehouse department:** aiming at identifying the Internal Purchase Requisition Service process executed in the unit and evaluating the proposed solution to its problems using DT. We had contact with the unit's analyst from the warehouse sector, which performs most of this process. The employee was recently hired, but we also had assistance from the purchasing and financial analysts who were performing these activities during the hiring period.
- **Unit's purchasing department:** aiming at identifying the purchasing process executed in the unit and evaluating the proposed solution to its problems using DT. We had contact with the unit's analyst from the purchases sector, which performs most of this process. The employee is already well-established in the company.
- **Unit's Management:** evaluating the research results for the unit's selected processes. We had contact with the unit's manager, who carries out signature and approval activities daily.

3.2 Data collection and analysis procedures

The use of the Business Process Management (BPM) tool can lead to an increase in the efficiency and effectiveness of the services provided in the organization through cycles of continuous improvements, where the organization and people need to adapt to new ways of working [17]. Throughout the project, 5 collaborators from

Alpha's headquarters participated, from analysts to directors acting as a source of information clarifying questions about available systems and helping identify successes and failures in previous initiatives. From Alpha's selected unit, 14 collaborators were involved, acting as our primary source of information about the company's processes and technology resources.

The research was divided into 4 phases (shown in Figure 1) using the BPM life cycle approach, comprising the (i) discovery, (ii) analysis, and (iii) redesign phases according to Dumas et al. [10] (shown in Figure 2).

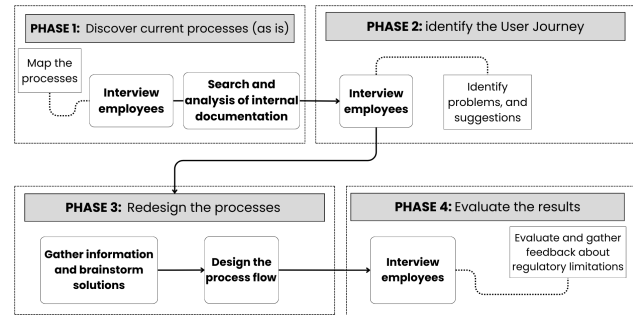


Figure 1: Research phases. Created by the authors.

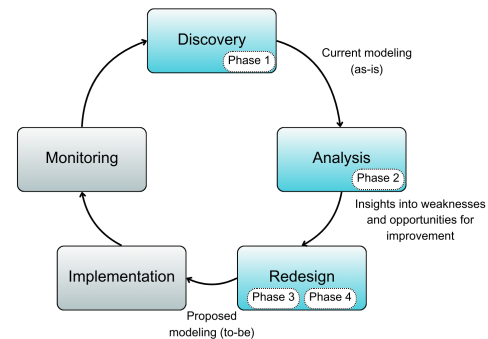


Figure 2: BPM cycle in the project. Adapted from Dumas et al. [10].

The phase 1 refers to the **mapping and modeling** of the current processes, aiming at discovering the current state of each process [10], and it took approximately 4 months to be completed. In this phase, 3 interviews were conducted with employees from the unit's selected departments, and 2 interviews with 3 employees from the Information Technology (IT) department at Alpha's headquarters. These interviews resulted in the preliminary Business Process Management Notation (BPMN) model of the process, with the activities and the actors who carry them out, and in the preparation of the mapping Sheet, with information on input, output, governing standards, technologies, opportunities, and risks.

The interview allows for the collection of qualitative data, where with an investigation through asymmetric dialogue, the interviewer

formulates questions so that the interviewees present themselves as a source of information [12].

In a previous phase of the project, during a workshop held at the unit, employees were asked to design the processes they perform. This initiative facilitated the mapping of the main processes existing in the unit, leaving only the interviews to be carried out to validate and better understand them. From there, to answer **RQ1**, we conducted 5 unstructured exploratory on-site interviews with Alpha's employees to identify the activities performed by the analysts in their respective processes. In these interviews, we sought to understand the regulations and rules as well as map the activities they carried out. For that, we sought Alpha's employees who carried out the daily processes from internal departments and the managers. The average interview time was 50 minutes.

In parallel, 2 unstructured exploratory interviews were conducted with 3 employees from the IT department at headquarters, aiming to identify the systems made available to everyone in the state and that could be used by the unit under analysis. Its average duration was 90 minutes. Before these interviews, we received a spreadsheet filled out by the employees we were going to interview, with a list of systems used, that served as a guide to direct the interview. We also used process manuals provided by headquarters to identify the names of all the systems we were going to question. The questions defined to guide the interview were the following:

- (1) **"Where was the system purchased?"**: To identify whether it is a licensed, contracted, or internally developed system.
- (2) **"What are the possible access platforms?"**: To identify whether it is possible to access via a web browser, mobile application, or desktop application.
- (3) **"How does it work and how does each user use the system?"**: To understand what the tools are used for, their functionalities, and whether there is communication with other systems.
- (4) **"Is the system still being used? If so, in which processes?"**: To understand the system's current applicability in the organization's context.
- (5) **"Is there documentation or manuals available?"**: To understand whether there are ways for users to learn how to use them.

After initial definition and modeling, the materials produced were submitted to the employees for evaluation of the information. New unstructured interviews were conducted so that the researchers could eliminate any remaining doubts about the process and thus finalize this stage¹, resulting in the current process flow designed in the platform Bizagi Modeler.

The phase 2 involved interviewing the employees at the unit to **identify the User Journey**, with problems and suggestions from the executors, and associating the processes with its issues [10]. In this phase, we aimed to understand the step-by-step process that the employees take to complete the activities, including actions in the system. 10 semi-structured interviews were conducted remotely using the Google Meet platform, with an average of 67 minutes of interview. As a result, we obtained more details about the performance of the activities, feedback on positive and negative points of

the current process, and recommendations for improvements in the future. It took approximately 2 months to complete the interviews and analyze their information.

The User Journey Map is a visual tool that can be used to understand how the user interacts with a given system or process. Endmann et al. [11] define user journey mapping as a creative method used to learn in a short time about the user's relevant processes and identify and plan the necessary User Experience (UX) activities. The study defines the moment to use this technique as before user interviews, preferably during a workshop, although it can also be carried out through user interviews when there are few people involved in the process, as used in this paper.

There is no consensus in the market or the literature on the correct design of the user journey map, so there are several models available to choose from that best suit the information sought. Similar to the methodology applied by Nunes et al. [25], we developed predefined questions, commonly used in structured interviews, with exploratory questions directed at the processes and systems used by the interviewed employees, resulting in a semi-structured data collection. The main objective of this action is to develop materials that could contribute to the analysis and redesign of processes and to identify the stages, expectations, frustrations, and needs of the actors [18], aiming to answer **RQs 2 and 3**.

To create the user journey, the script included questions to determine the positive, negative, and neutral points in the interaction with the systems while executing the processes [21]. In a complementary and observational way, we tried to identify the feelings, motivations, and behaviors of the users [5]. Thus, the questions were asked to guide the interviewees so that all the details of the steps in the processes could be explained.

During the interviews, the interviewer began by introducing himself, indicating the average length of the interview, and explaining its objective [16]. The interviews were recorded and transcribed so that a more detailed analysis of the data and later notes could be made. Verbal authorizations were requested for recording and transcription².

The phase 3 took 2 months, and involved using all the information acquired in conjunction with state-of-the-art research to devise the **redesign of the process**, adding recommendations for features and changes to be made to the unit's systems and processes [10] to enable digital transformation.

This research stage involved work to develop ideas and propose improvements to the selected processes, answering **RQ4**. To this end, a table was created on the Miro platform that follows a template³ created by the authors. Thus, together with the other researchers, the following fields were filled in:

- (1) **Problems/improvement points identified**: With the information acquired from the transcript analysis.
- (2) **System possibilities/what is already used in the market**: Where we put the information gathered through ad-hoc search in literature, search engines, and using a generative AI platform to gather as many ideas for improvement as possible.

¹The script for the in-depth interview on the mapped processes is available in the following link: <https://tinyurl.com/456pwm5r>.

²The user journey interview's script is available in the following link: <https://tinyurl.com/362ezyxd>.

³The template for gathering insights used to redesign the process is available in the following link: <https://tinyurl.com/35zpty7b>.

- (3) **Process rules:** With laws, decrees, and norms that affect the process.
- (4) **Team thoughts:** Where we put the ideas for changes to be proposed, generated with the joint analysis of the other fields.

Finally, in **phase 4**, we sought through 10 unstructured interviews with the unit's employees previously interviewed in the project to **evaluate the results**, indicating general satisfaction and expectations regarding the implementation of the proposed solutions, as well as feedback on propositions that could not be implemented due to regulatory limitations. With this, the redesign of the unit's processes[10] was completed, aiming at digitally transforming them.

4 Discussion and Results

This section seeks to report the activities carried out in the mapping and redesign of the processes of internal purchase requisition service, purchasing, and accountability from Alpha's selected unit through a methodology derived from the BPM cycle, detailed in section 3. The mapping and modeling of each process enabled the addressing of **RQ1**. Additionally, by identifying problems and opportunities through the User Journey, **RQ2** and **RQ3** were met. Based on this information, process improvements were proposed through remodeling to meet **RQ4**. The results highlight the importance of balancing the technical and social subsystems, as proposed by the Socio-technical Theory.

The activities defined in the methodology (Section 3.2) allowed the mapping of the following information, structured in a table format, for each process: (i) **Process objective:** Defining the purpose of the process; (ii) **Details:** Previous processes, next processes, inputs, activities, outputs and output requirements; (iii) **Monitoring:** Indicators, measurements, and controls currently used to ensure the effectiveness of the process; (iv) **Additional information:** Knowledge required to carry out the process, applicable legislation, technology and resources used, risks and opportunities.

4.1 Internal purchase requisition service process

4.1.1 Mapping and modeling the process. The **internal purchase requisition service**⁴ process begins with the manual delivery of a paper requisition to management, which analyzes whether it will be authorized. The warehouse employee collects the approved requisition and checks whether the item is available in the unit's inventory or has already been purchased. If the item is available, it is removed from inventory and recorded manually; if it is not available, and there is no balance in the warehouse, the requisition is forwarded to the purchasing department. If there is a balance in the warehouse, the requisition is entered into the ERP system pending management approval. If approved, the warehouse processes the requisition in the ERP system and delivers the material to the requester, who signs a delivery document. If not approved in ERP, the requisition is canceled. To map this process, 2 employees from the warehouse and the purchasing department were consulted, and there were no misalignments between reported steps.

⁴The **current internal purchase requisition service process** model with its mapping sheet is available in the following link: <https://tinyurl.com/444mmf32>.

4.1.2 User Journey, problems and opportunities identification. The **internal purchase requisition service** process is carried out mainly manually, except for approvals in the ERP system. Requesters lack information about the process and needed to ask about its progress. The maps created considered the actions performed by the two main actors in the process: the warehouse employee and the requester. The unit's management plays the role of analyzing the supply requisition form delivered in person by the requesting employee to initiate the process, as well as approving it. Since no interview was conducted with management to gather insights into their perceptions of this process, their map was not developed. However, efforts were made to identify improvements and opportunities for digital transformation with other employees.

The administrative analyst of the warehouse sector is the main actor in the process, responsible for effectively executing activities after receiving the supply requisition approved by management. Through the interviews conducted, it was possible to identify expectations regarding the process execution, its stages and actions, and the tools used, and to infer their feelings about performing these actions. This information, along with the opportunities identified by this actor can be found in its respective user journey map⁵.

The requesting unit represents any employee who submits a requisition when a supply need is identified. During the interviews, it was noted that there is no system for tracking the submitted requisition, making it difficult to track the request throughout the process. This extends to the purchasing process (Section 4.2), as a purchase requisition is created when the supply is not available in the warehouse. In light of this, opportunities such as allowing employees to submit requisitions digitally, enabling the visualization of the requisition process status, and providing justifications for changes to the request were identified in this actor's journey map⁶.

These scenarios suggest that the dependence on manual processes is, in part, a reflection of an organizational culture that favors consolidated practices and the centralization of decisions, increasing resistance to change. The lack of transparency in the process influences cross-functional collaboration, requiring better relational capability to deal with problems that may arise from communication failures, as well as reflecting a culture that needs to invest more in employee empowerment. By allowing requesters to track the progress of their requests and participate more actively in the process, an organization can build greater trust.

4.1.3 Process' redesign. The main change in the process⁷ considered that not all employees have access to the ERP system due to the licenses' high prices. Therefore, to gain agility and flexibility, it is suggested to create a system integrated into the ERP that allows for the submission and tracking of supply requests. This system could enable employees to view all their planned requests and send email notifications about the process updates. This digital tool would reduce the use of printed paper and minimize information loss, enhancing communication and cooperation between departments.

⁵The User Journey Map for the **Warehouse sector analyst** of the warehouse sector in the Internal Purchase Requisition Service process is available in the following link: <https://tinyurl.com/3yea67nc>.

⁶The User Journey Map for the **requesting unit** in the Internal Purchase Requisition Service process is available in the following link: <https://tinyurl.com/yhr72srd>.

⁷The **redesigned internal purchase requisition service process** model with its new mapping sheet is available in the following link: <https://tinyurl.com/yc5n4rsm>.

Additionally, it was recommended to remove the requirement for Management to approve item withdrawals from the stockroom via the ERP system, as it was proposed that approval be granted when the request is first submitted. Thus, if the request is approved, it is understood that the stockroom withdrawal will also be authorized, reducing the number of approvals required. These transformations involve changes in organizational culture characteristics, such as digital adoption and cross-functional collaboration.

By clearly communicating the benefits of the changes, such as transparency and reduced delays, it is possible to generate greater acceptance, as well as increase employees' digital maturity by training their use of the system. To sustain these changes, leaders must embrace and demonstrate a digital mindset. This includes actively supporting the implementation of technology tools and encouraging teams to adopt innovative practices, strengthening their team's ability to adapt.

4.2 Purchasing process

4.2.1 Mapping and modeling the process. The **purchasing**⁸ process works as follows: the department's analyst receives the request and analyzes its value: if it is less than the Brazilian minimum wage, the unit's internal budget is checked, and the purchase is completed and delivered to the requester. If the purchase value exceeds the minimum wage, the requisition is issued in the ERP system and awaits management approval. If it is rejected, the requisition is finalized in the ERP system. If approved, three quotes are obtained from suppliers and the quotation map is created to generate the purchase order and await new approval by management in the system. If the request is denied, it is finalized in the ERP system, but if it is approved, the order is made and sent to the supplier. The products are then received and delivered to the requester, and the purchase documents are sent to the state headquarters according to the type of item purchased.

4.2.2 User Journey, problems and opportunities identification. The **purchase** process involves two key actors: one responsible for task execution (the administrative analyst in the purchasing sector) and the other for approvals (the approver). Depending on the stage of the process, the approver could be either the unit management or the state headquarters' leadership. The primary actor's expectation is the fulfillment of the requested purchase.

For this process, one user journey map was developed. The workflow in the user journey map⁹ details purchases exceeding the value of one minimum wage, requiring additional stages that include interactions with suppliers and multiple approvals. Quotes from interviewees in the purchasing sector mention that information in the request can sometimes be provided incorrectly, making it necessary to include the item's specifications. Additionally, management does not receive system notifications to review the request, often requiring personal communication to inform them about it. These issues lead to increased purchase waiting times. At the end of the

process, all documentation must be manually stamped and signed by the purchasing analyst, followed by page numbering and filing.

Currently, there is a low level of communication between the areas that request purchases and the teams responsible for processing them. This practice limits visibility into the status of the order, contributing to frustration. Limited use of digital tools by employees and reliance on manual processes indicate the need to promote greater digital maturity.

4.2.3 Process' redesign. The redesigning of the **purchase** process considered the use of a functional system (either a new system or updates to the ERP system) to support both the purchase request and internal supply requisition processes. More information about opportunities, associated risks, monitoring methods, and regulations are identified in the process mapping sheet¹⁰. This system needs to be user-friendly to assist with purchasing and financial management, providing an overview of the process status so that requesters can track the steps and the justifications for any potential changes. Additionally, the purchasing sector and management would have access to perform justification and approval actions, improving the relational capability factor and enhancing cross-functional collaboration, agility, and flexibility.

Among the proposed improvements to optimize activities, the following stand out: (i) An API system integrated into the platform that performs automated searches for the average value of the item while also displaying a history of supplier prices; (ii) The quotation map could be automatically generated through e-procurement integrated with the system. This tool could be integrated through a dedicated ERP system module or by contracting an e-procurement service that integrates with the new requisition system; (iii) The system sends email notifications to management/directors to alert them about pending approvals, and after approval, the system forwards the request to the selected supplier; (iv) Inclusion of a simplified history and detailed process steps, including justifications if necessary; (v) Send the tax document through the system to the financial sector, which will receive a notification.

The creation and integration of systems proposed in the redesign can facilitate collaboration by providing centralized access to the status of orders, promoting greater transparency. The digitization of the procurement process must also be accompanied by robust data governance policies. Implementing clear practices and communicating information security can reduce resistance and ensure confidence in the adoption of new technologies. Implementing automated notifications and request histories stored in the cloud can empower employees, offering greater control over their demands (e.g. helping them to describe the item's specifications) and reducing the need for direct interventions.

4.3 Accountability process

4.3.1 Mapping and modeling the process. The **accountability process**¹¹ at the unit works as follows: Upon receiving a tax document, the employee manually records the information in the ERP system and generates a Word document, called a "history" with the same

⁸The **current purchasing process model** with its mapping sheet is available in the following link: <https://tinyurl.com/ywzp8rjs>.

⁹The User Journey Map for the **purchases exceeding the value of one minimum wage** in the purchasing process is available in the following link: <https://tinyurl.com/4strd34w>.

¹⁰The **redesigned purchase process model** with its new mapping sheet is available in the following link: <https://tinyurl.com/83mrzdpa>.

¹¹The **current accountability process model** is available in the following link: <https://tinyurl.com/jt8c7j5s>.

information recorded in the system. This document is printed so that the employee can paste the invoice or tax-supporting document onto the page. This document is then placed on the unit's management desk for signature. After being signed, the document is returned to the unit's financial department, which will scan it and store it locally on the machine until the end of the month, when the employee must prepare and send the accountability document to the state headquarters. To generate this document, the employee fills out a cover sheet template in Word, opens the ERP to issue the statement of the bank account used for purchases, and attaches these two documents with each tax history issued during the period of the statement, ordered by date as stated in the statement. After the document is attached, it is printed, signed by the unit's management, and scanned again to be sent to the state headquarters.

4.3.2 User Journey, problems and opportunities identification. For readability purposes, we divided the **accountability process** into 2 user journeys, which are explained below.

The first represents the step-by-step process for **recording financial transactions**¹². Whenever a tax document arrives, the financial sector analyst must register it in the ERP system and generate a purchase history for later accounting. The user's expectations involve registering the purchase in the system and creating the history to later compose the accounting statement. During the process, outdated system features make the process execution experience tiresome. The system does not generate the historical document required by the employee, so he has to create a Word document separately and fill in the same information provided in the ERP system. In addition, the system does not allow for attaching invoices, so it is necessary to print the history, paste the invoice, sign it, and send it to the unit's management to sign it as well.

The heavy reliance on paper-based processes, such as printing and physically signing documents, reflects a culture of attachment to traditional practices. This approach can create organizational inertia (i.e. increasing resistance to change), making it difficult to transition to more agile, digitized methods.

The second user journey in the accountability process represents the step-by-step process for **preparing and submitting the accountability document**¹³. At the end of each month, the financial sector analyst must prepare the financial report for the period that has elapsed to send to the financial management in headquarters. The employee is expected to prepare the accountability document and send the document to the financial sector in the headquarters. However, to generate the document, it is necessary to generate the current account statement in a part of the ERP system and then compare it with the historical records generated for the period that will be accounted for, to order them by appearance in the statement. After that, a cover page document for the statement must be created from a Word template, including the information on it, which could be taken directly from what is already in the system. Finally, when gathering all the prepared documents, they must be signed and sent to management for signature, generating delay, which adds to the

rework of scanning the documents to submit to the headquarter's financial sector.

The ERP system is customized for the main financial and tax management activities of the regional units. In the activities related to the accountability process, it was identified through an interview with an employee in the area that the ERP meets their activities by providing useful functionalities for the work, but it lacks simplicity and features adapted to the process to facilitate its completion. The transition to digital practices requires leaders who are willing to embrace and champion technological change. Supporting the use of systems that eliminate redundancies and enable the automatic generation of reports and documents reduces rework.

The employee saves the documents locally on their machine. The lack of tools that allow consultation of previously submitted documents or information on the progress of the process creates barriers to transparency, as well as posing a threat to information security, with the risk of losing important information.

4.3.3 Process' redesign. The redesigned **accountability process**¹⁴ aims at transparency and compliance with financial standards. The actors involved are the (i) financial analyst, responsible for receiving, moving, and forwarding the accountability report, and (ii) the unit management, responsible for electronically signing the report.

The proposed changes involved adapting the ERP system to include features to reduce the amount of paperwork issued, facilitate the generation of necessary documents, and speed up the digital signature process. The main output is the accountability document signed by those responsible for the unit and sent to the financial management at headquarters.

The proposed accountability process works as follows: The financial analyst must register every financial transaction, attaching the scanned invoice. Then, through the system, both the financial sector analyst and unit management must electronically sign the document. At the end of the month, the analyst must issue the accounting document in the system, where the ERP should generate all the required information in the expected format, according to the company's rules. This document must be electronically signed by both the analyst and unit manager before it is automatically sent to the financial management of headquarters. This document must be stored in the cloud and, if requested by the audit, could be printed.

For the proposed process to function correctly, we made recommendations for changes to the systems: (i) **Automated record of financial transactions**: The system must be able to receive the invoice or tax document as an attachment through integration with the e-procurement system, which already sends information about the service/input purchased in the purchasing process (Section 4.2) to the ERP system; (ii) **Electronic signatures**: It must be possible to sign documents through the system digitally. The system must notify and send an email to those involved that there are pending signatures; (iii) **Documents generated by the system**: The system must generate standardized documents for historical and financial statements and automatically send them to the financial manager and management for signature. The information must be acquired from the system itself from the period requested by the user; (iv)

¹²The User Journey Map for the **record of financial transactions** in the accountability process is available in the following link: <https://tinyurl.com/3b8wpyy4>.

¹³The User Journey Map for the **preparation and submission of the accountability document** in the accountability process is available in the following link: <https://tinyurl.com/44em356f>.

¹⁴The **redesigned accountability process** model with its new mapping sheet is available in the following link: <https://tinyurl.com/57uy69bc>.

Optimized notifications: The system must notify the finance department employee when the reporting period is approaching so that he/she can request the generation of the reporting document; (v) **Export documents:** The system must allow documents to be exported to PDF by authorized people.

Digital transformation in this process must be accompanied by a strong emphasis on data governance and ethics. The organizational culture must prioritize the security of information shared and stored in digital systems, ensuring the trust of employees and stakeholders. Information security education initiatives can not only increase employees' digital maturity but also empower them through ongoing learning and skill development. To do so, leadership needs to play an active role by setting an example in the pursuit of digital learning.

4.4 Unit's evaluation

The artifacts produced in the redesign stage were submitted to the collaborators involved in the processes of the analyzed unit for prior analysis and feedback gathering. To ensure a thorough understanding of the proposals, evaluation interviews were conducted with the same 10 collaborators to collect feedback and potential additional suggestions. In the interview, the redesigned process was quickly presented along with the recommendations made about the system, which received a positive evaluation by the interviewees, who were optimistic, as one of them said: *"These process changes would reduce the work time by three or four days"*.

In addition, in the interviews, there was a suggestion of another functionality that could assist in internal audit periods. The functionality refers to the system storing the documents generated (histories and financial statements) so that they can be consulted eventually. The team accepted the suggestion and added it to the list of recommendations and proposals for improvement.

The application of the BPM cycle, combined with the user journey, enabled the identification of critical issues in the processes, serving as a basis for suggesting innovative proposals that enhance the work experience. The proposed improvements aim to provide employees with greater autonomy, increasing process agility and efficiency - conditions that should be associated with changes in organizational culture to support digital transformation.

5 Conclusions and Future work

In summary, organizational culture elements pose critical factors in the success of digital transformation, as they influence how employees respond to change, the alignment of strategies, and the overall adaptability of the organization to new digital realities.

By aligning BPM practices with the cultural and technical needs of the organization, it was possible to propose process improvements while promoting a sustainable balance between social and technical subsystems. This study explored the use of BPM and user journey maps to map, analyze, and redesign three financial processes within a countryside unit of a Brazilian vocational education organization. We highlight the relevance of an integrated approach to digital transformation, optimizing both the social and technical subsystems. Applying the BPM cycle in these processes allowed us

to identify critical factors, such as resistance to change and collaboration between teams, and how these factors influence the success of digital initiatives.

The experience report shows how Digital Transformation (DT) requires an integrated approach to technological, cultural, and organizational aspects to ensure the effectiveness of changes. The need for interoperability between systems and continuous process adaptation reflects the **system complexity** challenge, while active employee participation in organizational change aligns with the **socio-technical view of information systems**, as outlined in the Grand Research Challenges in Information Systems in Brazil 2016-2026 (GranDSI 16-26) [3]. This alignment reinforces the need for strategies that reconcile technological innovation with change management, ensuring that solutions go beyond automation to foster user engagement and strengthen the organization's capacity to manage digital transformations.

Thus, this work contributes to the practical application of socio-technical theory in the management of organizational processes and information systems, as well as emerging technologies applied to IS, by demonstrating how they can guide organizational changes in digital transformation.

By seeking to build solutions to help employees with their problems, taking into account their ideas and suggestions, we were able to empower and engage them in the process of transforming the processes they are part of. From this, we hope to stimulate an innovative and safe environment so that the unit's employees can achieve continuous learning and development, adapting and seeking improvements in the way they conduct their work and in how they deliver value to their customers. Thus, Alpha can implement the available solutions to contribute to more agile and efficient processes.

The study addressed the research questions systematically. To answer **RQ1**, the study mapped the three processes from the unit, revealing a manual, inefficient structure with reworks, low transparency, and delayed approvals, reliant on paper-based documentation.

For **RQ2**, which sought to identify obstacles and inefficiencies in the current process, the findings revealed that inefficiencies included redundant data entry, low automation of processes, low cross-functional collaboration, reliance on manual signatures, and delays due to centralized decision-making processes, resulting in slower workflows and high rework rates.

RQ3 focused on the influence of existing technologies on process efficiency and user experience; the study highlighted how the ERP system was underutilized or misaligned with user needs, failing to support the processes and lacking integration and automation. The ERP system used in its current state, although functional, required changes and an attached new system to support a more efficient, digital-first approach.

Finally, **RQ4** aimed to propose improvements for optimizing the process. Recommendations for improvement focused on automating document generation, enabling digital signatures, and integrating existing systems for seamless workflows. The research culminated in redesigned processes that incorporate user feedback and emerging technologies (e.g. e-procurement), demonstrating a clear pathway for enhancing efficiency and user satisfaction.

Validity is ensured by detailing the procedures carried out during the actions, allowing reproducibility of the technique in contexts of countryside units of companies in the initial stage of digital transformation or without effective digital maturity. The **validity** and **reliability** of the data are guaranteed by triangulating data from interviews conducted with different focuses, which resulted in a more comprehensive view of the process (how it is done), systems (which technologies are used), and people (how they use the systems to perform daily tasks and how they feel when performing them). By cross-referencing data from different sources, the researchers could confirm insights and ensure a more comprehensive understanding of the digital transformation landscape within the organization.

As different interviews were conducted, there was greater customization and specification of the questions to the context, encompassing remaining doubts from previous interviews, posing a threat to **reliability**. To circumvent this threat, the interview techniques used were based on the literature under a structural logic that was applied to the context of the company analyzed. **Reliability** is also guaranteed when 4 researchers perform the research together with the review of the actions and artifacts by the other 4 researchers, who act as experts. In addition, we conducted final evaluation interviews with the employees of the Alpha's unit and with its manager, providing input for refining the proposed changes.

As for limitations, the study was conducted within a single organization, which may limit the generalization of the findings to other contexts. Additionally, the reliance on qualitative data from interviews, while rich and informative, may introduce subjectivity and biases.

In conclusion, this study contributes to the growing body of literature on the management of organizational processes and information systems by reporting one execution of a BPM process integrated with user experience techniques aimed at DT. The user journey map is an essential tool for describing and reporting problems and opportunities in the processes. This project fosters a culture that embraces change, collaboration, and continuous improvement, ultimately paving the way for more effective digital transformation initiatives in the future.

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