PROPOSAL FOR A MODEL BASED ON ELEMENTS AND DIGITAL TRANSFORMATION PROJECT MANAGEMENT PRACTICES TO SUPPORT BUSINESS AGILITY

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ABSTRACT

Objective: The objective of this article is to present a conceptual model that includes the elements and practices of Digital Transformation project management to support Business Agility, as the adoption of project management practices and digital technologies allows organizations to adapt flexibly to the business environment in which they operate.

Method/design/approach: To achieve the objective, field research was carried out using interviews and focus groups.

Results and conclusions: Based on the results, it was possible to present a conceptual model that represents the elements and practices of managing Digital Transformation projects to support Business Agility in organizations.

Research Contributions: In relation to theoretical contributions, the results obtained from the literature review compared with empirical research allowed discussions to advance on the phenomenon of Digital Transformation and Business Agility.

Originality/Value: A practical model capable of supporting project management professionals during the life cycle of Digital Transformation projects stands out.

Keywords: Business Agility, Digital Transformation Projects, Project Management, Agile Practices, Agile Leadership, Digital Technologies.

PROPOSTA DE MODELO BASEADO EM ELEMENTOS E PRÁTICAS DE GERENCIAMENTO DE PROJETOS DE TRANSFORMAÇÃO DIGITAL PARA SUPORTAR O BUSINESS AGILITY

RESUMO

Objetivo: O objetivo desse é artigo é apresentar um modelo conceitual que contempla os elementos e práticas de gerenciamento de projetos de Transformação Digital para suportar o Business Agility, pois a adoção de práticas de gerenciamento de projetos e tecnologias digitais permite que as organizações se adaptem de forma flexível ao ambiente de negócios onde estão inseridas.

Método/design/abordagem: Para alcançar o objetivo, foi realizada uma pesquisa de campo com a aplicação de entrevistas e grupos focais.

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1 INTRODUÇÃO

In recent years, organizations have increasingly adopted digital technologies to respond in a more agile and flexible way to market changes (Centobelli, Cerchione & Ertz, 2020). Digital Transformation (DT) is a process that drives this movement and is characterized by the adoption of innovative solutions based on digital technology (Sambamurthy, Bharadwaj & Grover, 2003). However, to foster digital innovation and harness the full potential of these technologies, it is necessary to go beyond the simple digitalization of operational processes and rethink strategic management models (Wiesboeck, 2018). Thus, TD emerges as support for the use of new digital technologies to improve business performance, such as improving the customer experience, streamlining processes and creating business opportunities (Fitzgerald et al., 2014), and may present, in this context, limitations in the use of TD to support strategic change and project execution (Warner & Wäger, 2019).

In this context, in which organizations are undergoing strategic changes in the way they operate, Business Agility (BA) emerges. BA is the ability of an organization to adapt quickly and effectively to market changes through the dynamic allocation of its organizational resources (Reitz, Jentsch & Beimborn, 2018) and can help organizations to better acquire and deploy resources to respond to the market environment (Chen et al., 2014). Thus, BA becomes a strategic support tool to support TD projects, resulting in increased agility in strategic initiatives or management of their processes or projects (Santo, Cardoso & Marques, 2022) in addition to contributing to the decreased adoption resistance in organizations (Umah et al., 2023).
TD and its correlation with BA promote a fundamental change in business processes, in the architecture of products, systems and services, in ways of working, in addition to existing processes and tools, resulting in changes in the organizational structure itself through the execution of TD projects (Bosch, 2019). Consequently, organizations are compelled to adapt their business strategies to enhance TD results. This adaptation, when done effectively, can lead to significant improvements in the performance of your projects (Gerster, Dremel & Kelker, 2019). Thus, this correlation between TD and BA, as well as their impacts on project performance, emerges as a significant research gap, justifying the need for additional exploration.

Based on the relationship between BA and the strategies adopted by organizations in TD projects, the following research question is proposed: **What are the elements and practices of TD project management to support Business Agility in organizations?** To answer this question, interviews and focus groups were carried out with executives in the project management area involved in TD project management. As a result, it was possible to present a conceptual model to demonstrate the elements and practices of TD project management to support BA in organizations.

This article is structured into six sections. Following this introduction, section 2 presents a brief theoretical framework on TD and BA projects. In section 3 the research design is presented. The results are demonstrated in section 4, followed by the discussion in section 5. Finally, section 6 presents the final considerations.

**2 THEORETICAL FRAMEWORK**

Below is a brief review of the literature on the topics of Digital Transformation, Business Agility and Digital Transformation Project Management.

**2.1 DIGITAL TRANSFORMATION PROJECTS**

TD, initially focused on the computerization of processes (Auriga, 2021), began to be treated more broadly, involving the adoption of new digital technologies to increase the performance and competitiveness of organizations. The changes caused by TD impact business models, operations, customer experience and organizational culture (Downes & Nunes, 2013).

For Bilgeri, Wortmann and Fleisch (2017), the changes arising from TD bring with them several challenges, both in relation to strategic organizational issues and the understanding
of TD, its definition and the way of designating and using available digital capabilities and resources. In this sense, issues related to the challenges of TD are also highlighted by Rogers (2016), when stating that the breadth of TD needs to be treated strategically, paying attention to the relationship with other domains, such as: customers, competition, information, innovation and value generation.

According to Yoshikawa et al. (2020), TD projects impact three dimensions of organizations: organizational, business and technology. In the organizational dimension, according to the authors, it is necessary for governance to promote a cultural change so that the organization embraces innovation and digital transformation. However, according to Pereira et al. (2019), there may be resistance within the organization's own culture, during the DT implementation process, in addition to insufficient resources invested in the process, a factor that should be on the leadership's own radar.

Among the main challenges in TD projects are the lack of individuals trained in technical issues, project management and critical thinking (Thornton et al., 2019). In the same line of thought, Bilgeri, Wortmann and Fleisch (2017) highlight that executives need to use digital capabilities aligned with organizational strategy to deal with the challenges and uncertainties arising in TD.

TD projects are complex and strategic, and can result in significant changes in activities, functions, models and business processes, in addition to the organizational structure of organizations. These changes must be aligned with the BA process to ensure the success of projects, in addition to contributing to the innovation process (Silva, 2023).

### 2.2 BUSINESS AGILITY

Agility is an essential element for innovation and competitive performance in contemporary business environments. Environmental changes require organizations to be able to adapt their business models quickly. Speed in decision making is essential for organizations to be able to respond to market changes.

As a way to respond quickly to the volatility of the market environment, organizations must act on three fronts: (i) responding to customer needs; (ii) relationship with partners; and (iii) remodeling of business processes (Sambamurthy, Bharadwaj & Grover, 2003). In this sense, leadership must be present and act transparently when communicating with teams, in order to transmit the necessary trust to teams (da Silva, Penha & da Silva, 2022).
Kettunen and Laanti (2017) argue that the reinvention of business processes through the adoption of digital technologies can lead to improvements in the quality of products and services, the customer experience and operational costs. The flexibility and adaptability of digital business models are essential to meet customer needs and expectations (Moi & Cabiddu, 2021).

Given this need for agile responses, speed and flexibility are key elements for decision making. TD project teams can use tools that assess the maturity of the product roadmap, whose response can identify the probability of product success, avoiding wasted effort in planning and implementation (Münch, Trielfinger & Lang, 2019). The specialization of products and services and technological specialization are highlighted as differentiating factors for companies to stand out in an increasingly aggressive market. Corroborating this, companies have a future vision of the need to adapt to TD. The use of innovative digital technologies can provide the BA with the necessary support so that these elements can be acquired.

2.3 TD PROJECT MANAGEMENT

Project management is the planning, organization, management, and control of resources in terms of short-term objectives that help an organization achieve specific objectives (Kerzner, 2013). The essence of project management aims to support the execution of an organization's competitive strategy to obtain results (Milosevic & Srivannaboon, 2006).

A project team that adopts agile project management practices must be composed of members with different hard and soft skills, but who complement each other as a whole, thus forming a multidisciplinary team (Busse & Weidner, 2020). The hard skill required must support employees in the technical knowledge necessary to complete the planned activities (Kalenda, Hyna & Rossi, 2018). On the other hand, Maisiri and Van Dyk (2021) identify that employees must have interpersonal skills (soft skills) such as creativity, communication, negotiation and adaptability in order to contribute to the team's efficiency and productivity.

The incorporation of interactive and visual techniques, which aim to facilitate the understanding of information relating to projects, can provide employees, especially those who make up innovation teams, with better awareness of the use of technology in TD projects (Arias-Pérez, Alegre & Villar, 2021).
3 RESEARCH METHOD AND TECHNIQUES

This qualitative research was carried out through semi-structured interviews with professionals in the field of TD projects. The objective was to explore the interviewees' knowledge and experiences on the topic, seeking greater proximity to the observed phenomenon (Creswell & Creswell, 2017). The questions were based on a set of predefined questions, where the objective was to understand how the elements and practices of TD project management relate to BA.

The interviews were conducted virtually and involved project managers and other professionals with at least two years of experience in the field of TD projects. The research sought a more in-depth understanding of the topic, following an exploratory-descriptive approach in the final phase of the study (Creswell & Creswell, 2017). This type of research, according to Forza (2002), aims to elucidate or predict the occurrence of a phenomenon, test existing theories or deepen knowledge in a specific context. Da Silva et al. (2010) highlight that qualitative research plays a very important role in understanding the actions of interviewees, allowing understanding and understanding reality within the context of the research.

In qualitative research, the data saturation criterion is reached when the collection of additional data does not generate new information (Marshall et al., 2013). This means that the dataset is complete and data collection can be terminated. Therefore, the research included the participation of 10 interviewees, separated into two distinct groups with 5 members each, to meet the research objectives.

The first group, composed of executives in project management positions, such as CTOs, Directors and Senior Managers, had the purpose of understanding organizational strategies and preparations for changes in TD project management practices. The second group, composed of technical professionals, including coordinators and technical leaders, sought to explore experiences and challenges related to the use of digital technologies, in addition to understanding the obstacles faced in implementing such technologies in managing TD projects. Based on this set of skills, the questionnaire was prepared seeking to obtain a vision of TD project management.

The research protocol was developed based on the research corpus, in which 5 categories included in a TD process were identified: Operational Impact, Business Processes, Digital Technologies, Project Management and Organizational Agility. The interview protocol was then structured in three stages with the aim of performing data collection.
Before starting the interview, the interviewee was asked for authorization to record the content. After authorization, the first stage of the protocol aimed to present the interviewee with the objective of the research and the structure of the questionnaire. The second stage allowed the interviewee to give a brief presentation about their experience and professional performance. Finally, the last stage explored the categories Operational Impact, Business Processes, Digital Technologies, Project Management and Organizational Agility and how these categories connect and relate throughout the TD project management process.

Table 1 demonstrates the profile of the selected interviewees. The questionnaire was applied to executives responsible for the strategic planning of TD projects (a profile called “Management” in the research) and to professionals from project teams with knowledge of digital technologies used in TD projects (a profile called “Technical” in the research).

Table 1
Identification of interviewees

<table>
<thead>
<tr>
<th>ID</th>
<th>Name</th>
<th>Position held</th>
<th>Segment</th>
<th>Profile</th>
<th>Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>E01</td>
<td>Interviewee 1</td>
<td>Technical leader</td>
<td>Financial</td>
<td>Technician</td>
<td>2 years</td>
</tr>
<tr>
<td>E02</td>
<td>Interviewee 2</td>
<td>CTO</td>
<td>Insurance</td>
<td>Management</td>
<td>15 years</td>
</tr>
<tr>
<td>E03</td>
<td>Interviewee 3</td>
<td>Coordinator / Technical Leader</td>
<td>Financial</td>
<td>Technician</td>
<td>10 years</td>
</tr>
<tr>
<td>E04</td>
<td>Interviewee 4</td>
<td>Project Manager</td>
<td>Financial</td>
<td>Management</td>
<td>10 years</td>
</tr>
<tr>
<td>E05</td>
<td>Interviewee 5</td>
<td>Project Manager</td>
<td>Insurance</td>
<td>Management</td>
<td>6 years</td>
</tr>
<tr>
<td>E06</td>
<td>Interviewee 6 *</td>
<td>Coordinator / Technical Leader</td>
<td>services</td>
<td>Technician</td>
<td>2 years</td>
</tr>
<tr>
<td>E07</td>
<td>Interviewee 7 *</td>
<td>Project Manager</td>
<td>Public sector</td>
<td>Management</td>
<td>7 years</td>
</tr>
<tr>
<td>E08</td>
<td>Interviewee 8</td>
<td>Project Manager</td>
<td>services</td>
<td>Management</td>
<td>28 years</td>
</tr>
<tr>
<td>E09</td>
<td>Interviewee 9</td>
<td>Technical leader</td>
<td>Financial</td>
<td>Technician</td>
<td>2 years</td>
</tr>
<tr>
<td>E10</td>
<td>Interviewee 10</td>
<td>Coordinator / Technical Leader</td>
<td>services</td>
<td>Technician</td>
<td>12 years</td>
</tr>
</tbody>
</table>

Source: Prepared by the authors (2023).
Note: *email interviews

Table 4 demonstrates the characterization of the interviewees. 10 in-depth interviews were carried out with professionals who work in IT project management in companies in the financial, insurance, services and public sector sectors. The experience in project management of the interviewees is varied, with the least experienced having 2 years and the most experienced having 28 years of experience. Due to the unavailability of 2 interviewees’ schedules, it was necessary to send answers to the questions by email.
The interviews were carried out using the “Zoom” tool as a way of holding the meetings online, in which they were recorded in individual digital files for later analysis. The interviews lasted an average of 35 minutes. Secondly, the interviews were transcribed using the application available at https://app.transkriptor.com/ which, based on the recorded interview and converted into a file in “.mp4” format, uses Artificial Intelligence resources to transcribe the speeches in files in the format “.txt” or “.doc”.

After transcribing the interview audios, the software was used Atlas.TI for the data analysis and interpretation process. The adopted analysis process applied data classification through the attribution of a code, adopting the “Theory Driven”, which allows comparison between other codes, in addition to the frequency in the interviewees’ statements.

On the other hand, it is worth highlighting that in this process of analyzing the interviewees' statements, some categories of analysis may emerge guided by data, from a “Data Driven” perspective. In this way, the data were interpreted in a coding process, in accordance with the prescriptions of Charmaz (2006). The results contributed to describing TD project management elements and practices to support BA and, finally, a conceptual model was presented that represents this relationship.

Qualitative data analysis was carried out in three stages. In the first step, open coding was used to identify events that support and explain the research problem. In the second stage, the events were grouped into first-order codes, based on the relationships between them. In the third stage, the first-order codes were organized hierarchically, based on the relationships identified between them.

4 RESULTS

The results are presented according to interview data analysis categories: operational impact, business processes, digital technologies, project management and organizational agility.

4.1 OPERATIONAL IMPACT

In the context of TD project implementations and for this research, Operational Impact relates to the impact of technological innovations on business processes, products and services offered by an organization. Additionally, the results can be read based on the return on investment stipulated for the objectives defined in the organization's strategic plan, in addition
to the perception of a constant improvement in the interaction between its customers and partners or the promotion of a better customer experience.

Therefore, organizations must seek to make it clear in strategic planning how investments aimed at modernizing their business and technological processes will be applied, and what the possible returns are. In addition to the financial investment, special attention is needed on how to keep employees aligned with the established objectives.

In this context and given the interview data, it was possible to extract some insights in relation to the two groups interviewed about factors that can impact the organization's operations (Figure 1). In relation to impacts, the need for constant training of its employees, obtaining safe and reliable processes and products for its customers, as well as improving the operational efficiency of the organization by reducing the costs of its operations, stands out.

**Figure 1**

*Identified factors that make up the Operational Impact*

It was possible to identify in the interviewees' statements some concerns regarding TD projects in the context of “Operational Impact”. The “Cost Reduction” factor represents how the investment made in projects will benefit the organization; the “Employee Training” factor demonstrates how the project will focus on the technical and functional training of employees; and the “Security and Reliability” factor deals with how the customer will be provided with a feeling of security when using the products and services developed.

During the analysis of the interview data, it was possible to identify that the elements “Employee Training” and “Cost Reduction” were more relevant to the technical group, while the “Security and Reliability” element was more relevant to the management group. The statements presented by the interviewees demonstrate concerns about the need for organizations to implement actions to encourage employees to stay up to date, whether in technical knowledge
(due to the constant evolution of technology) or in the development of soft skills. However, in
the elements “Security and Reliability” (which considers the exposure of customer data and
reliability in existing processes) and “Cost Reduction”, the group of technicians presented a
higher value, with 58%, compared to 42% presented by the group of managers. It is inferred,
from this result, that the technical group presents a willingness and concern for the
implementation of projects to seek simple and efficient solutions, with low cost and better
return, using the maximum available technical resources.

In relation to the “Cost Reduction” factor, strategic planning must consider the
assessment between the acquisition of a certain technology versus the cost of this acquisition.
This assessment also includes deciding whether to acquire a popular solution on the market
(used by a competitor), integrating new technologies through partnerships with suppliers or
seeking to develop the solution internally. This can be seen in the transcription of interviewee
E02’s speech below:

"[...] What I see that this he does part of a solution you go give ... like this everything
we does within the company he There is a motivator that is the result. Then So, regardless of what I'm boarding, if I'm building one technology or if I'm boarding one technology, if I go to take one outsourcing decision to make at home [solution development], everything that goes according to ROI. Which or how much do I to board one Artificial Intelligence (AI) in solution that I have here Will you get back to me? reduce time, right? That I go to spend building that one so that I have a return for company. Then So, everything is very based on the feedback I have for company. " (E02).

E2’s speech corroborates the conclusions of the study by Telegescu (2018), which
mentioned the advantages of adopting technologies such as Cloud Computing, Big Data and
Blockchain in modernizing organizations' technology park, reducing total IT costs and
providing better integration of proposals for digital technology solutions or research and
development of new solutions. On the other hand, Sjödin et al. (2021) highlight the need for
organizations not to embark on a market wave to adopt innovative technologies, but rather to
take always into account how strategic planning considers investments in new technologies that
can really add value to the business and always maintaining focus in customer service.

According to Liu, Yang and Liu (2021), organizations can be influenced to follow
market trends when investing in technology to reduce costs. However, as mentioned by some
interviewees, some aspects must be evaluated, such as (i) the effectiveness of the solution
adopted by a competitor; (ii) monitor innovations and success stories in the market; (iii) evaluation and implementation of these cases in your reality.

Regarding the “Employee Training” factor, interviewees agreed that organizations should prioritize the continuous increase in employee knowledge. This can be accomplished through internal training programs, financial support for external courses, or knowledge sharing on digital platforms. However, it is important not to impose this incentive, as some employees may not feel interested (E8, E10). In this sense, Wolf, Semm and Erfurth (2018) highlight the importance of organizations internally developing the necessary resources for TD projects, which can be accomplished through technical training programs or through the team's willingness to create solutions internally, avoiding unnecessary expenses with the acquisition of solutions on the market.

Employees must have a set of skills that benefit teams and the organization as a whole. Furthermore, leadership and the development of interpersonal skills (soft skills) are also important, although less mentioned by interviewees. Research by Brunet-Thornton, Cramer and Jirsák (2019) and Maisiri and Van Dyk (2021) highlights that skills such as creativity, communication, negotiation and adaptability improve the efficiency and productivity of employees, skills observed by E03.

"[...] Then not like this from the for also just get ready technically, I think if we had here on the team only people techniques, and very good techniques, but not had bought the new culture, right? Think different, think agile, lean, us no it would have achieved OK? Then I think there's a second one cornerstone here, and the third soft skills because you involves very like this communication, the negotiation part, so we it was left very more close to business, so demanded also for the team that doesn't there was, right? To develop that third pillar that remained very more in highlight, okay?" (E03).

When evaluating the “Security and Reliability” factor, it was possible to identify in the management profile a greater concern about the impact that problems that occur during project deliveries can cause to the client, resulting in a loss of confidence in the services purchased. Due to this, as pointed out by Wilson (2020), it is necessary to have risk management planning in order to mitigate them.

Organizations that use agile methodologies in their projects see the continuous assessment of Kalinowski risks as essential et al. (2020). According to the authors, and corroborated by E05's speech, agile practices enable faster deliveries and more rigorous quality
control, due to the constant review of the steps performed, exemplified in meetings such as the "daily meeting".

"[...] I learned from risk management is to make mistakes quick and change what you it is doing, right? And that, man, in our day by day and not in the quarter and not in the month and not at week." (E05);

Therefore, in the context of organizations, strategic planning must consider factors that directly affect the cost of the project, such as technology acquisition or employee training. These actions help organizations use their human and technological resources efficiently, promoting flexibility to respond to changes and boost BA.

4.2 BUSINESS PROCESSES

Organizations are being impacted by the rapid adoption of digital technologies in their business processes to meet the demands of the most demanding customers and partners. This leads them to reevaluate their processes, incorporate new digital technologies and redesign products and services, resulting in the development of new digital businesses and improved experiences for customers and partners (Van Zeebroeck, Kretschmer & Bughin, 2021).

From the analysis of the interviewees' statements, it was possible to identify some factors that reinforce the importance of agility in the context of business processes (Figure 2). In relation to these factors, the evolution of business processes to make them digital, the concern with innovation (integrating technology and business) and the result that TD will promote in relation to the perception of customers and partners, improving their experiences.
Figure 2

*Factors highlighted by interviewees that make up the Business Processes category*

![Diagram showing percentages for Business Processes categories]

Source: Prepared by the authors based on interview data, 2023.

Figure 2 reflects, based on the interviewees’ statements, a general concern in accelerating the evolution of business processes in organizations (represented in "Digital Business"), promoting innovation in products and services (reflected in "Innovation") and improving relationships with customers (represented in "Customer Experience") through the execution of TD projects.

Regarding the “Digital Business” factor, interviewees highlight the importance that organizations must have in relation to the integration between technology and business, when developing their TD projects. In fact, as demonstrated by Yucel (2018), digital businesses must be developed around technology, innovation and data. In agreement with Wang (2020), IT teams are playing an increasingly relevant role in the strategic planning of organizations, as digital technologies are recognized as essential assets, not just support tools.

The lines of E03 ("[...] even we don’t even talk about business and technology anymore, right? In fact, it’s just one thing, it needs to be talked about together. "), E04 ("[...] today, every Every time I need to make any change in technology we have to involve a product area and a design area. ") and E10 ("[...] what is most important within a team, for a TD project , I think it’s also knowing how to work in partnership like this, you know? ") are in line with the studies presented by Yucel (2018) and Wang (2020), and demonstrate how there should not be a segregation between technology and business.

Organizations have adopted digital business (e-business) to transform their business processes, making them more agile and flexible to quickly meet customer demands (Wynn & Olayinka, 2021). According to the authors, the integration of systemic solutions in e-business can result in the reduction of waste of human and technological resources, through the
automation of manual and/or repetitive activities, in addition to reaping the benefits of simplifying processes that would otherwise be performed complex form (Bodiøva & Martinez, 2017; Hofmann, Samp & Urbach, 2020; Marek et al., 2019).

The interviewees highlighted in their speeches the factors that can influence innovation in organizations. This includes being aware of market trends in terms of digital technologies, avoiding adopting new technologies without careful evaluation. Furthermore, it is important that organizations do not become complacent with their products and services, continually seeking innovation. Experimentation and data analysis also play a determining role in strategic decision-making (Boratyńska, 2019).

Another factor presented is the customer experience, where organizations need to understand the current iteration of the customer and develop solutions that make it more pleasant. Furthermore, organizations inserted in this context need to present quick responses to meet customer needs, in search of agility and flexibility in the execution of TD projects, making customers' lives easier when using the organizations' services, especially in the context of practices agile, as highlighted in E10’s speech below:

"[...] You business processes they end like this being impacted because a TD project usually search make the customer 's life easier [...] that he be likely to do with more quick payment , ask one second way, which he get it suddenly on a single channel several things , have several functionalities there . " (E10).

Finally, the factor “Understanding the customer's pain”, in the interviewees' view, expresses an inherent concern of the teams, when executing TD projects, in trying to understand the problem that affects the customer in order to implement what is actually necessary, always looking for simplicity in solutions. This understanding is in line with studies by Pacheco, Sanchez and Guido (2020) and Jesemann et al. (2021), where decision-making must be guided by the interpretation of customers' pain points and boost the creativity of members in designing solutions, as highlighted below in E05’s speech:

"[...] when we look at TD, we hope that when there is one changing a business , it it is carried out is in better shape quick , right? With less effort , right? For work and more quick and assertive , right? ” (E05).
Upon completing the analysis of the statements from the interviews related to the “Business Processes” category, it was possible to assess that the studies that make up the research corpus of this dissertation were corroborated by the results of the analysis, demonstrating that organizations, when developing initiatives for digital renewal, seek to create and/or remodel their business processes towards e-business, by enabling capabilities that stimulate innovation, the incorporation of new digital technologies and the use of data to support decision-making.

4.3 DIGITAL TECHNOLOGIES

The evolution of digital technologies is putting pressure on organizations to become more agile and flexible to meet the demands of an ever-changing market. To ensure their sustainability, organizations are investing in digital technologies that can help transform their business processes and provide an improved experience for customers (Moreira, Ferreira & Seruca, 2018).

Based on the impressions obtained from the interviewees' responses, the items “Technology adding value” and “Knowledge”, which derive from the use of new digital technologies in the evolution of business processes (Figure 3). The first item is related to how the incorporation of new technologies can promote innovation in business processes, thus adding value to organizations' businesses. The second item is related to the knowledge acquired, with the use of new digital technologies, which can be shared by the teams that execute TD projects.

Figure 3

*Identified factors that make up the Technology category*

Source: Prepared by the authors based on interview data, 2023.
Figure 3 demonstrates, based on the analysis of the interviewees' statements, that employees with a technical profile seek to improve their knowledge by adopting a new digital technology. The development of employees' technical skills, whether encouraged by the organization or the result of self-development, can have a direct impact on organizations' costs. This correlation also aligns with the approach of Genest and Gamache (2020), who emphasize the importance of knowledge and understanding of technology as a prerequisite for DT, encouraging organizations to train their employees for the digital era.

The factor "Technology adding value" demonstrated how the incorporation of digital technology can positively impact business processes, leading to improvements in customer response and providing a return on investment made by the organization (E02). This is in line with the study by Wiesboeck (2018), which emphasizes the importance of aligning the ability to visualize strategic uses of innovative technologies with IT and business strategic planning, which is part of the organization's strategic planning.

As reported by E01, teams that execute projects that use the agile methodology can, during some specific ceremonies, share the knowledge acquired in some specific technology. According to the Agile Manifesto (Fowler & Highsmith, 2001), the "Review Sprint" ceremony is a moment when the team comes together to present what was developed during the Sprint, promoting knowledge sharing. Although this is not limited to just this ceremony, ideally, at any time necessary, any team member who has knowledge can share it with others.

"[...] I think they are within the agile us he has some as rituals, some ceremonies that they lead us to think, for example, like knowledge sharing he knows? Then he has these meetings in which we could to do that information exchange." (E01).

Teams that adopt the agile model must be composed in a multidisciplinary way, with members who have a variety of skills to carry out activities and deliver projects (Fowler & Highsmith, 2001). However, in situations where a project requires specific knowledge, it may be necessary to include experts (internal or external) on the team, which can have the benefit of increasing the team's knowledge, potentially resulting in cost reduction through sharing and dissemination of this knowledge (Wolf, Semm & Erfurth, 2018).

The factor “Break of resistance to the new” from the interviewees' reports corresponds to a feeling of discomfort in relation to technology innovation, thus demonstrating that resistance to the adoption of new technologies can come from the end customer (who has fear of using the innovations offered by organizations) or the employees themselves, who believe
that this change directly affects their daily lives with the challenge of adapting to the new. This factor can be found in E02’s speech:

“[...] we there has to be one resilience that I would you say? [...] and at the beginning is generally uncomfortable, and what I I wanted emphasize? It's uncomfortable, right? Why when you it is very comfortable with certain thing, you no move forward, you goes into in an area there that for you be comfortable then you no he does none movement of change.” (E02).

At the end of the analysis of the interviews, it is possible to correlate, for example, how technological innovations enable a new offer of products and services to customers, with the creation of new business opportunities and an expected reduction in operational costs. Furthermore, the implementation of DT can cause discomfort in some employees due to the need for them to adapt to the use of new technologies (Chetty et al., 2018). In this sense, when developing strategic planning, leadership must consider the development of incentives and training programs as a way to mitigate the learning curve to which these employees will be exposed (Maisiri & Van Dyk, 2021).

4.4 PROJECT MANAGEMENT

Agile project management approaches are increasingly popular in a volatile and uncertain business environment. Unlike traditional approaches, agile methodologies promote the incremental and collaborative development of products or services, which allows organizations to respond to demands more quickly and flexibly (Hassani et al., 2018; Kozarkiewicz, 2020).

As demonstrated in Figure 4, it was possible, based on the statements of the two groups interviewed, to obtain some insights into the perceptions regarding TD project management practices, which can impact the execution of projects. It was possible to group the statements into 2 factors: “Agile Practices” and “Self-organized Teams”:
Figure 4
Factors identified that relate to the Agile Projects category

When observing Figure 4, it is noted that there is a balance of speeches, between the groups of technicians and managers, in relation to the “Self-organized Teams” factor, demonstrating the importance of this characteristic, within the agile concept, for both groups. In line with this perspective, Fowler and Highsmith (2001) highlight that one of the fundamental principles of agile approaches is the ability of project teams to self-organize to carry out their tasks.

Leadership based on mutual trust is an approach that promotes team autonomy and reduces the need for micromanagement (da Silva, Penha & da Silva, 2022). In this approach, leadership develops a process of mutual trust and self-organization in teams, thus allowing them to have greater autonomy and responsibility for carrying out their activities (Gobble, 2018). However, as highlighted by Mikalsen et al. (2018), this greater autonomy also brings new challenges, such as the possibility of teams not pursuing clear and well-defined objectives. This correlation can be highlighted in E05’s speech:

“[...] Okay, put it a goal: in this year here we people he wants reach two million customers, increase our customer base from twenty percent and reach two millions of customers. Wow, great, but leave how to resolve this up to the team. Did you understand? And not design the business, otherwise the team will to stay focused in what? In resolving the project, delivering the project and not in to bring customers. And not eliminate the pain that client it is having.” (E05).
A framework or tool can be adopted by teams to support them in their deliveries, helping to plan and monitor activities. Scrum or Kanban, for example, may not necessarily be the best choice for all teams, and selection depends on specific needs.

This approach is in line with the principles presented by Kovalev et al. (2020), who suggest combining best practices from Scrum and Kanban, along with management tools like JIRA, to facilitate monitoring activities, deal with impediments, and allow team members to track progress against established goals. However, as mentioned by E09, a lack of planning can result in the generation of rework:

"[...] our day to day here we performs a lot and plan little. I think here we has many eagerness now to start The to execute. To the instead of us to look the entire context that permeates any type of business. Here we you have to analyze, plan, replan and plan again, design and redesign until reach a consensus that all world OK understanding all what that he was request and then execute it." (E09).

Leadership must promote, as presented by the interviewees, multidisciplinarity among team members, so that employees can share knowledge with each other, avoiding dependence on members with specialized skills. As presented by Chetty et al. (2018) and Maisiri and Van Dyk (2021), this type of initiative can help the organization to overcome a deficiency in team qualification. Furthermore, and as endorsed by the Agile Manifesto (Fowler & Highsmith, 2001), teams must seek to evolve the quality of the team, with more robust and reliable deliveries and greater quality in the product or service developed, in addition to the individual development of its members.

At the end of the analysis of interviews related to the “Project Management” category, it was possible to identify that agile practices are important for the development of an organizational agile culture. Agile practices, such as incremental development, collaboration between teams and frequent communication, contribute to the formation of self-organized and multidisciplinary teams, which are essential for organizational agility. This agility allows organizations to quickly adapt to changes and respond to customer needs.

4.5 ORGANIZATIONAL AGILITY

Today's business environment is characterized by unpredictable and rapid changes. To adapt to this scenario, organizations need to adopt an agile management model. This model is
based on principles such as collaboration, flexibility and adaptation. It involves implementing agile practices in project management, forming self-organizing teams and developing agile leadership.

Figure 5 illustrates some factors that emphasize the need for organizations to adopt a mindset focused on operational agility. Among these factors, the importance of cultivating participatory and agile leadership, the implementation of initiatives to foster employee engagement and motivation, as well as the improvement of organizational maturity, all resulting from the adoption of DT in organizations, stand out.

**Figure 5**

*Factors related to “Organizational Agility”, according to interviewees*

![Diagram showing factors related to organizational agility](image)

Source: Prepared by the authors based on interview data, 2023.

When examining Figure 5, the interviewees' statements demonstrate that, within the context of “Organizational Agility”, the factors “Leadership” and “Organizational Maturity” are more relevant compared to the “Motivation and Engagement” factor, thus demonstrating that Organizations must promote organizational maturity, towards agile, throughout their entire organizational structure. Once this maturity begins to consolidate, leadership can evolve into one that acts in a clear, transparent and participatory manner at all stages of this change. Consequently, this could promote greater engagement among organizations’ teams and employees.

The adoption of some practices can influence the engagement and motivation of employees with organizations and the projects to be carried out. Organizations, by adopting the encouragement of an “Owner Attitude” behavior, can develop in employees the necessary motivation to strive to ensure that the activities under their responsibility and that of the team are completed successfully (Lamacchia, Chowdhury & Sharif, 2020). According to the
authors, motivated employees feel positive, proactive and productive and are seen as an important asset of organizations.

In organizations based on agile culture, leaders take on the role of mentors and seek to empower teams to make their own decisions, becoming self-organized (Shirokova et al., 2020; Vilaplana & Stein, 2020). In return, according to the authors, teams demonstrate an increase in satisfaction with the work completed and commitment to new challenges. This is in line with the study by Ackermann, Schell and Kopp (2021), in which organizational agility is facilitated in organizations that have a culture of innovation and experimentation.

To this end, leadership must be participative and encourage teams to be self-organized and multifunctional, in addition to conveying to employees a vision, by organizations, that they should not be considered just as numbers, but as fundamental assets, as reported by interviewee E04:

"[... ] when we has one leadership that is close to a collaborator and understanding there the person’s day to day life, I think this is one key there for success. [...] Nor ever all world it is motivated and one of the challenges of leadership is to make this be, no ever nobody go rotate your motivation ever not at the maximum, but that it has really a purpose so that things happen, right? Collectively, right? ” (E04).

An employee's engagement and motivation can be achieved in several ways. According to the interviewees' statements, incentives can be presented through salary equality in relation to the market, leadership present on a daily basis (which demonstrates a commitment to the team's autonomy) or a reinforcement of the employee's professional development. As cited by Lamacchia, Chowdhury and Sharif (2020), organizations must provide conditions in which employees feel positive, proactive and productive (called by the authors as 3P) and are seen as an important asset of the organizations. E03 presents in his speech the importance of this employee involvement:

“[...] leadership, it is a fundamental role in this engagement, business, parties involved, then no necessarily only our team [technology team] but all to the around, and a proximity very strong with management, right? IT management, planning, so with these teams that are there directly with management, okay.” (E03).

It was possible to correlate, among the factors identified, that Leadership plays a fundamental role in the implementation of agile culture in organizations, starting from it the
initiative to reinforce and encourage the values defended by agile within teams. Initiatives that stimulate employee Motivation and Engagement must be considered premises by organizations when establishing their strategic plans, and clearly permeate how they will be implemented.

5 DISCUSSION OF RESULTS

After analyzing the interviews, it was possible to describe the elements and practices of TD project management to support Business Agility, highlighting the categories presented as a result of the RSL in relation to the factors that relate the results of field interviews with professionals with executive profiles and technicians who worked in the area of Information Technology. With this relationship in hand, it was possible to highlight the necessary conditions for TD projects to support BA, which can be visualized through a conceptual model based on TD project management elements and practices to support Business Agility, presented in Figure 19.

Figure 9
Conceptual model based on TD project management elements and practices to support Business Agility

![Conceptual model based on TD project management elements and practices to support Business Agility](image)

Source: Prepared by the authors based on research data, 2023.
When observing the conceptual model, some elements and practices of management agile projects, applied in TD projects, contribute to the success of TD implementation. As a result, such elements and practices leverage the results predicted in the organizations' strategic planning. In view of what was presented and as a result of this research, TD projects, to support Business Agility in organizations, are based on five skills: (i) Organizational Agility; (ii) Project Management; (iii) Operational Impact; (iv) Digital Technologies; (v) Business Processes.

In relation to the conceptual model, Organizational Agility is understood in this research as the way in which an organization sets itself up to face challenges arising from competitiveness and respond in an agile way to threats and opportunities that arise. In this context and as a result of the field research, it was possible to point to 3 elements/practices applicable in managing TD projects to support Business Agility: (i) Leadership; (ii) Motivation and Engagement; (iii) Organizational Maturity.

Based on the analysis of the interviews and within the context of Organizational Agility, Leadership is a fundamental factor for the success of digital transformation projects. Leaders must be close to their teams, support them in making strategic decisions and remove barriers. They must also motivate and engage teams, demonstrating that employees are important to the organization and encouraging them to have an ownership attitude. Furthermore, organizational maturity must be developed through clear strategic planning and a corporate environment that favors an agile culture.

Project Management is understood in this research as the adoption, by organizations, of Agile Project Management practices with the aim of responding more quickly and with greater flexibility to the demands of their projects compared to the traditional management method. In this context and as a result of the field research, it was possible to point to 2 elements/practices applicable in the management of TD projects to support Business Agility: (i) Self-organized Teams; (ii) Agile Practices.

As identified in the analysis of the interviews and within the context of Project Management, self-organized teams are those that have the autonomy to establish goals, develop strategies and seek continuous improvement. The adoption of agile practices by these teams, associated with management tools, can bring benefits such as faster and better quality project deliveries, execution of backlog items that add value to the business and the formation of multidisciplinary teams.

The Operational Impact is understood in this research as the effect of renewing business processes, through the incorporation of new digital technologies that can be noticed in the
products and services offered by the organization, in addition to the consequences that can be perceived from the return on investments carried out, foreseen in the objectives defined in the strategic planning of organizations. In this context and as a result of the field research, it was possible to point to 3 elements/practices applicable in the management of TD projects to support Business Agility: (i) Employee Training; (ii) Security and Reliability; (iii) Cost Reduction.

As seen in the analysis of the interviews and within the context of Operational Impact, organizations must implement employee training and development initiatives, in addition to adopting risk management and active governance. Adapting products and services to government standards may require rework and bring unmapped risks. Organizations must seek to acquire new technologies in a planned and strategic way, evaluating internal or external development options.

In relation to Digital Technologies, it is about the need for organizations to use disruptive digital technologies as a way of helping organizations in renewing their business processes to make them digital, thus providing a better experience to customers and ensuring the sustainability of organizations. In this context and as a result of the field research, it was possible to point to 2 elements/practices applicable in managing TD projects to support Business Agility: (i) Knowledge; (ii) Technology adding value.

Based on the analysis of the interviews and within the context of Digital Technologies, knowledge sharing and the adoption of digital technologies are essential for the success of digital transformation. Sharing knowledge within project teams increases the learning curve, makes teams multidisciplinary and independent, and breaks resistance to technological innovation. The adoption of digital technologies promotes the creation of new business opportunities, improves the customer experience, adds value to the product or service, and increases revenue and reduces costs.

And, finally, Business Processes is understood in this research as the need for organizations to use disruptive digital technologies as a way of helping organizations renew their business processes to make them digital, thus providing a better experience for customers and ensuring the sustainability of organizations. In this context and as a result of the field research, it was possible to point to 3 elements/practices applicable in the management of TD projects to support Business Agility: (i) Digital Business; (ii) Innovation; (iii) Customer experience.

As verified in the analysis of the interviews and within the context of Business Processes, digital businesses must be developed based on continuous and collaborative integration between business and IT teams, with a focus on simplifying processes and the
constant and continuous delivery of value. Organizations must be attentive to emerging technological solutions and encourage continuous innovation of products and services, evaluating the results based on customer experiments. Teams must define the scope of projects based on customer needs, in order to respond in an agile and simplified way.

As a premise for executing the conceptual model, organizations that execute TD projects must take into account the five skill areas highlighted in the model in Figure 19. Table 5 presents the actions related to the elements and practices of TD project management for support Business Agility.

Table 5

Elements and practices to support Business Agility

<table>
<thead>
<tr>
<th>Skills</th>
<th>Elements</th>
<th>Practices</th>
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</thead>
<tbody>
<tr>
<td>Organizational Agility</td>
<td>Leadership</td>
<td>Proximity to the team</td>
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<td></td>
<td></td>
<td>Decision making</td>
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<td></td>
<td></td>
<td>Removing team barriers</td>
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<td></td>
<td>Motivation and Engagement</td>
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<td></td>
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<td>Employee seen as an asset</td>
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<td></td>
<td></td>
<td>Encourages ownership</td>
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<td>Organizational Maturity</td>
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<td></td>
<td>Clear strategic planning for the organization</td>
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<tr>
<td>Project management</td>
<td>Self-organized teams</td>
<td>Autonomy in setting goals</td>
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<td></td>
<td></td>
<td>Continuous improvement</td>
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<td></td>
<td>Agile Practices</td>
<td>Adoption of agile practices</td>
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<td></td>
<td></td>
<td>Using support tools</td>
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<td></td>
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<td>Promotes team multidisciplinary</td>
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<td>Operational Impact</td>
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<td>Training incentive initiatives</td>
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<td>Skills development</td>
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<td></td>
<td>Security and Reliability</td>
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<td>Market Trends</td>
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<td>Technology x Cost</td>
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<td>Digital Technologies</td>
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<td>Knowledge sharing</td>
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<td>Resistance break for the new</td>
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<td></td>
<td>Technology adding value</td>
<td>New business opportunities</td>
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<td></td>
<td></td>
<td>Technological modernization</td>
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<tr>
<td>Business Processes</td>
<td>Digital Business</td>
<td>Integration between business and technology</td>
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<td></td>
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<td>Process simplification</td>
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<td></td>
<td></td>
<td>Constant deliveries</td>
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<td></td>
<td>Innovation</td>
<td>Pay attention to market news</td>
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<td>Indiscriminate use of new technologies</td>
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<td>Continuous search for innovation</td>
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<tr>
<td></td>
<td>Customer Experience</td>
<td>Understand customer pain</td>
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<td></td>
<td></td>
<td>Quick responses to meet customer needs</td>
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</tbody>
</table>

Source: Prepared by the authors, 2023
Table 5 presents the actions related to the support of project management elements/practices with the organizations' skills. In the context of the “Organizational Agility” skill, organizations must invest in participative leadership, employee motivation and engagement, and organizational maturity. Leadership must be close to the teams, support them in decisions and remove barriers. Motivation and engagement must be stimulated through participative leadership and the creation of an environment in which employees feel valued and have autonomy. Organizational maturity must be developed through clear strategic planning and the development of skills that favor an agile culture.

In the context of the “Project Management” skill, organizations must invest in self-organized teams and agile practices. Self-organized teams must have the autonomy to set their own goals and seek continuous improvement. Agile practices must be adopted and executed, associated with management tools and skills development that favor the creation of multidisciplinary teams.

In the context of the “Operational Impact” skill, organizations must invest in employee training, system security and reliability, and cost reduction. Employee training should be encouraged through programs that promote maturity and the acquisition of new skills. The security and reliability of systems must be guaranteed through cross-operation between risk management and governance areas. Cost reduction must be sought through constant alignment with strategic planning, evaluating the benefits of internally developing solutions, and paying attention to market news.

In the context of the “Digital Technologies” skill, organizations must invest in sharing knowledge and breaking resistance to innovation. Knowledge sharing must be encouraged between employees and the organization, and actions must be taken to overcome resistance to the adoption of new technologies. The incorporation of new technologies must be promoted, aiming to create new business opportunities and modernize the technological resources in use.

In the context of the “Business Processes” skill, organizations must invest in the integration between business and technology, in continuous innovation and in understanding customer needs. The integration between business and technology must be strengthened so that processes are simplified and executed consistently. Innovation must be promoted through attention to new technological solutions and the evaluation of results based on experimentation. Understanding customer needs must be deepened so that solutions that quickly meet their needs can be proposed.
6 FINAL CONSIDERATIONS

This article aimed to present, based on the analysis of semi-structured interviews with professionals in the area of TD projects, a conceptual model covering the elements and practices of TD project management to support Business Agility in organizations. The results found led to the identification of a framework that presents the elements and practices, as well as the conditions of use necessary for organizations to prepare or adopt the elements and practices of TD project management to support Business Agility.

At the end of this research it can be concluded that the general objective was achieved. Based on the research question “What are the elements and practices of TD project management to support Business Agility?”, it is highlighted that the objective of this research was to present a conceptual model to demonstrate the elements and practices of TD project management. Digital Transformation projects to support Business Agility.

In response to the research question, based on the results of this research, it is highlighted that the DT implementation process is an arduous path for organizations to face. The changes necessary to reach a degree of organizational maturity in which agile culture can be incorporated by organizations must be reflected throughout their organizational structure, in order to provide the necessary conditions for the development of organizational agility. Business processes must be revisited and renewed for digital, based on innovation with the use of technology and data support for decision-making, offering the customer a new experience. The incorporation of new digital technologies can create new business opportunities and more efficient and less costly services, creating an operational impact throughout the organization.

However, the human factor still remains the most important link in this chain. Leadership must be present throughout the project's life cycle, supporting decision-making and removing barriers that arise. It must be active and participative, motivating and engaging teams, encouraging the employee's ownership attitude, which stops feeling like just “one more”. As the Agile Manifesto itself brings as a value, “Individuals and interactions between them more than processes and people”.

As an academic contribution, the research presented a conceptual model that relates the elements and practices of TD project management with the skills and conditions necessary to support Business Agility, thus corroborating the studies that made up the research corpus, since the findings presented in the field research, and which contributed to the elaboration of the conceptual model, were present in the study articles. In addition, the contribution to academic literature is associated with the identification of skills and conditions so that multidisciplinary
and multifunctional teams, led by managers who present strategic planning in a clear and transparent way, are more likely to act in an agile and innovative way.

As a practical contribution, the conceptual model sought to demonstrate some skills, factors and conditions that would make up the elements and practices of TD project management to support **Business Agility**. The skills contained in the model suggest that organizations seek mainly to place the employee as the protagonist of the transformation, driven by challenges. Furthermore, it is suggested that organizations develop simpler, more interactive and clear communication to mitigate customers’ fears regarding the use or consumption of products and services based on new digital technologies.

This research presents limitations found in other qualitative evaluations. The execution of this research was limited to two groups of professional profiles with a number of five interviewees for each group. Therefore, the result obtained in this research is considered valid for this interviewed public. Therefore, the results and contributions demonstrated in the research can be applied to other companies that adopt agile project management practices. Another limitation is related to the fact that the interviewees work on projects whose organizations implement agile practices that mainly use the **Scrum** and/or **Kanban frameworks**. As a suggestion, it is proposed to carry out the research in organizations that use other agile frameworks, such as SAFe or **Large Scale Scrum (LeSS)**.

**REFERENCES**


