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Digital Transformation and Organizational Ambidexterity: what we can learn from a pet retail company

Transformação Digital e Ambidestria Organizacional: o que podemos aprender com uma empresa do varejo pet

Transformación Digital y Ambidestreza Organizacional: qué podemos aprender de una empresa minorista de mascotas

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ABSTRACT

Objective: To evaluate a use case of bimodal Information Technology (IT) (or ambidextrous IT) of a pet retail company, identifying how the technology orchestration is defined in its functions, processes and management means, as well as the advantages and challenges of the proposed model, regarding the capacity for innovation driven by organizational ambidexterity (*exploration* and *exploitation*), to support the Digital Transformation (DT) of that organization. **Method:** Single case study. **Main results:** The survey brought two highlights: one related to organizational culture - ambidextrous IT still presents human challenges that need to be continuously worked on and overcome, and another related to senior executive leadership - the importance of having an orchestrating role (Strategic IT) to coordinate the two teams (Traditional IT and Innovative IT). **Relevance/originality:** This research made the connection of three concepts (ambidexterity, *exploration,* and *exploitation*) with digital transformation, bringing as support the study of a practical case of an organization in the Pet Retail sector. **Theoretical/methodological contributions:** Against the background of the theory of Organizational Learning, the study in question brought a modern and applied view of the term ambidexterity as a bimodal capacity relevant to conducting digital transformation in organizations. **Contributions to management:** The research generated a reference diagram with the positions of the company's *C-Level* executives (CMO, CIO, CDO), making the connection with the concepts of Ambidexterity, *Exploration* and *Exploitation*.

Keywords: Pet Retail. Exploration and Exploitation. Ambidexterity. Digital Transformation. Digital Capabilities.

RESUMO

Objetivo: Avaliar um caso de uso da Tecnologia de Informação (TI) bimodal (ou TI ambidestra) de uma empresa do varejo *pet*, identificando a forma como a orquestração da tecnologia está definida em suas funções, processos e meios de gestão, bem como as vantagens e desafios do modelo proposto, no que tange a capacidade de inovação impulsionada pela ambidestria organizacional (*exploration* e *exploitation*), para apoiar a Transformação Digital (TD) dessa organização. **Método:** Estudo de caso único. **Principais resultados:** A pesquisa trouxe dois destaques: um relacionado com a cultura organizacional - a TI ambidestra ainda apresenta desafios humanos que precisam ser continuamente trabalhados e superados, e outro relacionado à liderança de executivo sênior – a importância de existir um papel orquestrador (TI Estratégica) para coordenar os dois times (TI Tradicional e TI Inovativa). **Relevância/originalidade:** Esta pesquisa fez a conexão de três conceitos (ambidestria, *exploration,* e o *exploitation*) com o de transformação digital, trazendo como apoio o estudo de um caso prático de uma organização do setor de Varejo *Pet*. **Contribuições teóricas/metodológicas:** Tendo como plano de fundo a teoria da Aprendizagem Organizacional, o estudo em questão trouxe uma visão moderna e aplicada do termo ambidestria como capacidade bimodal relevante para condução da transformação digital nas organizações. **Contribuições para a gestão:** A pesquisa gerou um diagrama de referência com as posições dos executivos *C-Levels* da empresa (CMO, CIO, CDO), fazendo a conexão com os conceitos de Ambidestria, *Exploration* e *Exploitation*.

Palavras-chave: Varejo Pet. Exploration e Exploitation. Ambidexterity. Transformação Digital. Capacidades Digitais.

RESUMEN

Objetivo: Evaluar un caso de uso de Tecnologías de la Información (TI) bimodal (o TI ambidiestra) de una empresa minorista de mascotas, identificando la forma en que se define la orquestación de la tecnología en sus funciones, procesos y medios de gestión, así como las ventajas y desafíos. del modelo propuesto, respecto de la capacidad de innovación impulsada por la ambidestreza organizacional (exploración y explotación), para apoyar la Transformación Digital (DT) de esta organización. **Método:** Estudio de caso único. **Principales resultados:** La investigación arrojó dos aspectos destacados: uno relacionado con la cultura organizacional: la TI ambidiestra todavía presenta desafíos humanos en los que es necesario trabajar y superar continuamente, y otro relacionado con el liderazgo ejecutivo senior: la importancia de tener un rol de orquestación (TI estratégica) para coordinar ambos periodos (TI Tradicional y TI Innovadora). **Relevancia/originalidad:** Esta investigación conectó tres conceptos (ambidestreza, exploración y explotación) con la transformación digital, apoyando el estudio de un caso práctico de una organización del sector Pet Retail. **Contribuciones teóricas/metodológicas:** Teniendo como antecedente la teoría del Aprendizaje Organizacional, el estudio en cuestión aportó una visión moderna y aplicada del término ambidestreza como una capacidad bimodal relevante para impulsar la transformación digital en las organizaciones. **Aportes a la gestión:** La investigación generó un diagrama de referencia con las posiciones de los ejecutivos C-Level de la empresa (CMO, CIO, CDO), haciendo la conexión con los conceptos de Ambidestreza, Exploración y Explotación.

Palabras clave: Comercio minorista de mascotas. Exploración y Explotación. Ambidestreza. Transformación Digital. Capacidades digitales.

INTRODUCTION

The theory of Organizational Learning, from the area of Administration and Business (Business & Management) and from the field of Organizational Studies, is defined as a dynamic process of creation, acquisition and integration of knowledge aimed at the development of capabilities and resources that contribute to the best performance of organizations (Santos et al., 2015). It describes two distinct and complementary ways in which organizations learn and innovate, known as exploration and exploitation. These terms do not have an exact translation into the Portuguese language, but in seminal studies on the subject, the author James March (1991, 1995), defined them as different activities performed by organizations that divide the focus and attention of their teams, and considered them as the ability of a company to effectively balance the refinement, efficiency, prioritization, implementation, and evolution of existing items (exploitation) and the ability to search, vary, experiment, and discover new items (exploration). Organizational ambidexterity is based on the exploration and use of resources related to these two basic terms: exploration and exploitation.

The way technology has been considered by organizations, individuals and society has changed in recent times, from the exclusive use to improve efficiency and productivity through automation, to a strategic capacity for innovation and differentiation through Digital Transformation (DT) (Kao et al., 2024; Kraus et al., 2022; Li, 2020; Oludapo et al., 2024). DT is a process that aims to improve an entity, causing significant changes in its properties through the use of information technologies (Vial, 2019). This process has as its main characteristic the rapid adoption of technologies such as artificial intelligence, Internet of Things, data analysis and automation, fundamentally reshaping economic dynamics on a global scale (Costa et al., 2023). In response to dynamic and turbulent environments (Kohli & Grover, 2008), which require the adoption of increasingly accessible and differentiated technologies for business transformation, DT can be an alternative for organizations to operate, creating opportunities, markets and new business models (Kao et al., 2024; Vial, 2019) - It has driven innovation for individuals, organizations, and society. From it, the role of traditional Information Technology (IT) - which was born with a focus on stability, information security, profitability generation and stricter governance, has gradually been changed. Demands for agility, exploration and innovative use of IT are increasingly necessary in organizations (Leidner & Mackay, 2008), which has challenged the Traditional IT model.

This ambidextrous model, which focuses in parallel on *Exploitation* and *exploration*, when applied to IT, was called bimodal IT (or, *bimodal IT*) by Gartner in 2013 (Gartner, 2013, 2015), and soon became known and used by market professionals (practical) – although it is not a new concept, it is presented as the simultaneous experience of two IT functions: the Traditional *versus* the Digital, or the Operational *Versus* Innovative (Albino & Souza, 2019; Horlach et al., 2016).

The coexistence of these two modes (Traditional IT and Innovative IT) was defined as the practice of managing IT deliveries separately and coherently, one mode focused on stability, and the other on agility and innovation (Meirelles, 2023). To meet this scenario - focus on innovation while taking care of IT availability and efficiency - organizations have made changes in their IT management models. Bimodal IT (or, ambidextrous IT) arises from three needs: i) greater agility in IT; ii) a more innovative and explorative IT, that is, freer to exercise its innovative capacity; iii) and a structural alignment with the strategy, which has created specific business units with a focus on digitalization (Bossert et al., 2014).

In an ambidextrous context, this division of IT attributions has been used to address DT and organize capabilities to maintain an agile model that allows exploring, innovating, and transforming businesses using digital technologies. At the same time, ambidexterity put in place can keep the systems and value chain core of the company in a stable and performant manner (Badr, 2018).

Research conducted by Gartner in 2016, which involved almost 3 thousand CIOs (*Chief Information Officer*), in 84 countries, identified that approximately 40% of these executives were already dealing with a bimodal IT journey in their organizations at that time (Gaughan, 2016). On the other hand, there are also criticisms about this model, which in the long run, can bring cultural divergences and performance evidenced in silos, increasing the gap and misalignment between business and IT, and thus hindering the innovation process (Meirelles, 2023). The authors Davenport and Westerman (2018) identified that executives working in the bimodal model began to have difficulties in orchestrating investments, since working with innovation is not only about dealing with technology, but also working on prospecting, discovery, financial and resource contributions, in the most diverse aspects, so that innovations and legacy coexist in a differentiated way, but integrated. Given this context, it can be said that research on how organizations can be designed and operated to address organizational ambidexterity is rare and valuable for technology teams that want to start their operation for agile deliveries related to digital transformation.

The objective of this research was, therefore, to contribute to the coverage of this gap, evaluating a use case of bimodal IT (or ambidextrous IT) of a Pet retail company, identifying the way in which the technology orchestration is defined in its functions, its main processes and means of management, as well as the advantages and challenges of the proposed model, especially with regard to the capacity for innovation driven by organizational ambidexterity (*exploration* and *exploitation*), to support the DT of this organization.

The evolution of business in the digital age is characterized by stages, ranging from just a simple electronic catalog to the creation of common communities of interest (Albertin, 2010). This has been based on the use of the internet to generate value and e-commerce as a business model. The appropriation and use of technology has allowed organizations to change the way they conduct their business: from mass production and supplier focus to customer focus and customization.

An example of this in the retail market *Pet*, cited in the current literature, is the availability of services *online* that promote personalization and recurring attention, based on the subscription of pet food (personalized

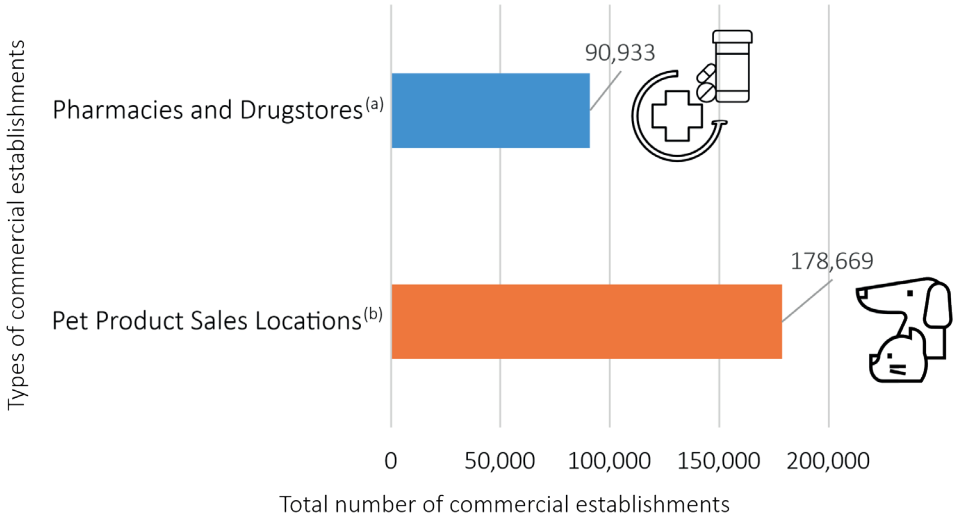
boxes of products according to specific needs), with the provision of periodic deliveries (Lima et al., 2024).

To highlight the importance of the retail segment *Pet* for the country, based on a study made available by the Câmara Setorial da Cadeia Produtiva de Animais de Estimação (2018), linked to the Ministério da Agricultura e Pecuária (Government of Brazil), in 2018, there were already just over 150 thousand establishments in Brazil as points of sale of products for *Pet*. In another study carried out by the Instituto Pet Brasil (2022), it was found that in 2021 this number already jumped to 178,669 companies – being points of sale such as *pet shops*, veterinary offices and clinics, agristores and food retail - representing about 62.7% of all companies operating in this sector in Brazil.

On the other hand, for comparison purposes, the number of commercial establishments categorized as pharmacies and drugstores throughout the national territory (another very expressive and relevant segment in the country) reached about 90,933 companies in activity (Abradilan, 2023; Abrafarma, 2024) in this same period – as illustrated by Figure 1. The comparison between the Pet retail segment and pharmacies/drugstores is justified by the relevance of both sectors in the Brazilian market and their distinct dynamics of digital transformation. While the number of commercial establishments in Pet retail is almost double that of the pharmacy segment (178 thousand against 90 thousand in 2021), the digital context of these two sectors presents similar and distinct challenges and opportunities. Both segments are trying to consolidate themselves in the digital environment and in meeting the demands of increasingly digital customers. Pharmacies, for example, focus on regulatory integrations, logistics, and improving customer experience, while Pet retail focuses on strategies more focused on purchases through recurring subscriptions and offering digital services. This comparative analysis allows us to identify how IT practices can be transferable or adjusted between sectors with different technological and cultural needs, enriching the understanding of the application of the organizational ambidexterity model.

Figure 1

Pet Retail vs Pharmacies and Drugstores – number of commercial establishments in Brazil in 2021



Note. Figure elaborated with icons (CC BY 3.0) adapted from Rafiico Creative Studio (Iconfinder, 2024). Compiled data obtained from entities in both sectors: (a) pharmacies and drugstores operating in the country in the period (Abradilan, 2023; Abrafarma, 2024); (b) sales locations such as pet shops, veterinary offices and clinics, agristores and food retail in the period (Instituto Pet Brasil, 2022).

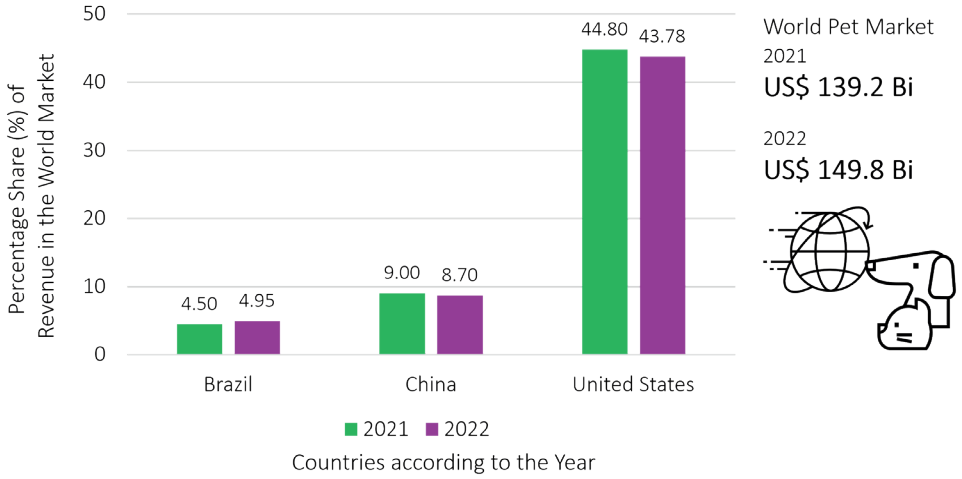
Figure 1 shows that the number of commercial establishments operating in the Brazilian Pet retail sector already exceeded in 2021, by almost double, the number of pharmacies and commercial drugstores in the country.

According to the Associação Brasileira da Indústria de Produtos para Animais de Estimação (ABINPET), the market *Pet* in 2018 it represented 0.36% of the Brazilian GDP, ahead of the housewares and industrial automation sectors (Abinpet, 2023a).

With data compiled from research carried out by the *Euromonitor International* (2023), that same association (Abinpet, 2024) also reported that retail market sales *Pet* in the world (worldwide turnover) was about USD 149.8 billion in the year 2022, with the United States market occupying the first position (with 43.78% share), followed by China (with 8.7%) in the second position. Brazil represented in the same period about 4.95% of this market, occupying the third position, and the countries Germany, Japan, the United Kingdom (4.6%) and France (4.0%), had shares close to the Brazilian one. In the year 2021 (Abinpet, 2023b), the segment earned US$ 139.2 billion worldwide, with a higher share of the United States (44.8%) and China (9%) - as illustrated in Figure 2.

Figure 2

Share (%) of Countries in the Worldwide Pet Market Revenue in 2021 and 2022



Note. Figure elaborated with icons (CC BY 3.0) adapted from Rafiico Creative Studio (Iconfinder, 2024). Data compiled from studies published by Abinpet (2023b, 2024).

Figure 2 compares the percentage share of three countries (the United States, China, and Brazil) in the global Pet market revenue in 2021 and 2022, and clearly identifies that the United States has a leading position in this market. But, while the United States and China decreased their shares in the world market in 2022, Brazil, which in 2021 had a 4.5% share, had its result increased to 4.95%.

The selection of the company VarPet for the study was based on its unique characteristics as a leader in the Pet retail segment in Brazil. With more than 200 physical stores, three distribution centers and an e-commerce that represents a third of its sales. VarPet presents an ideal scenario to observe the practical application of the ambidextrous IT model (bimodal IT) as it places DT as an engine for transforming your business beyond physical stores, such as marketing, organic growth and customer segmentation actions (Newtrade, 2019). On the other hand, its physical growth in the national market also requires a focus on traditional technology, worrying about more fundamental issues such as information security, infrastructure and office systems that support and continue to operate in a differentiated way even in the scenario of exponential physical growth. The focus of the research on exploring Traditional IT (*Exploitation*) and Innovative IT (*exploration*) within the context of digital transformation, provides valuable insights into the practices of technological governance, organizational integration and innovation, all requirements of extreme importance in the case studied.

As a way of directing the development of the following sections of this research, which reported what was possible to learn from a Pet retail company in its DT trajectory, the authors sought to explore and evaluate the following *proposition P1*: An organization that has ambidextrous IT (or bimodal IT) represents a more favorable environment for Digital Transformation.

In the end, the interpretative critical analysis was used, defended by Klein and Myers (2001), which seeks to produce detailed investigations of the way in which a given reality has been constructed, combining discourse analysis and inductive data analysis.

LITERATURE REVIEW

Exploration, Exploitation, and Ambidexterity

Exploration is associated with activities that increase variation in organizational processes, functions, and tasks, including invention, and risk-taking, in contrast to *exploitation,* which typically represents activities with immediate and short-term objectives, with a focus on control over key organizational actions and processes (Hunter, 2003). Companies tend to seek more immediate and guaranteed returns, using already known solutions (*Exploitation*), instead of assuming expenses to seek new solutions (*exploration*) (Denrell & March, 2001).

The words *ambidextrous organization* (or, ambidextrous organization) are mentioned in the seminal academic literature (Duncan, 1976; Tushman & O'Reilly, 1996), and are related to organizations that seek a balance between the activities of *exploration* and *exploitation*, and the term ambidexterity (or, in English, *ambidexterity*) refers to the organizational capacity to implement incremental and radical changes, to allow organizations to remain competitive.

The process of evolution of organizational knowledge and the search for innovations depend on *exploitation* - being the property of value creation and continuous improvement based on existing knowledge, in addition to the *exploration* - which brings the ability to explore and seek new knowledge and innovations (Brix, 2020). He and Wong (2004) mentioned that *exploitation and exploration* are fundamentally different logics, which create tensions by themselves, compete for the scarce resources of organizations and generate conflicts. Investing in one direction means, on the other hand, giving up focus on the other. It is a fundamental tension of organizations in general: to invest and engage *exploitation* sufficient to ensure its stability and continuity, meet the needs of existing customers, based on already consolidated organizational knowledge, while applying energy in *exploration,* to ensure the necessary innovation and the feasibility of business continuity, when seeking to reach customers or emerging markets, which constantly require new organizational knowledge (Benner & Tushman, 2003; O'Reilly III & Tushman, 2011).

Studies in the literature have also identified that the use of IT and Information Systems (IS), when incorporated into the strategic planning process of an organization, promote innovation in *exploitation* and *exploration* (Yoshikuni et al., 2022), and that the practical implementation of a portfolio of IT/IS applications increases the influence of innovation (*exploration* and *exploitation*) and *ambidexterity* (ambidexterity) in organizational performance (Yoshikuni et al., 2018).

The proper use of *exploitation* for continuous improvement and evolution of the current state, with a degree of *exploration* to bring innovation and competitiveness, is what has demonstrated value for organizations (Lubatkin et al., 2006).

Put organizational ambidexterity into practice or *organizational ambidexterity* (Guerra & Souza, 2022) has been the goal of organizations seeking to develop digital capabilities in their business. Study of Liu, Liu, and He (2023) sought to identify the extent to which organizational ambidexterity (*exploration* and *exploitation*) in an organization's DT, improves its efficiency

and promotes the growth of its business. The authors Kronblad, Pregmark, and Berggren (2023) sought to understand a problem of ambidexterity, within the scope of law firms, in a practical way - the research investigated how law firms could simultaneously maintain an already consolidated way of working (*exploitation*), and at the same time, start using management technologies with analytical approaches using Artificial Intelligence (AI) and *Machine Learning* (ML) (*exploration*). Another investigation (Dean, 2022) integrated theoretical aspects of dynamic capabilities with organizational ambidexterity, at the team level, and teamwork, suggesting that organizational leaders can shape ambidextrous teams to generate competitive advantage for their organizations in rapidly changing environments.

Digital Transformation

According to Vial (2019), Digital Transformation (DT) "is a process that aims to improve an entity, causing significant changes in its properties through the use of information technologies" (p. 118). It can also be seen from three perspectives: i) the organizational: which involves the transformation and creation of new business models; ii) social: which understands DT as a phenomenon that alters and influences lives and society as a whole; and iii) technological: which defines digital transformation as the use of new technologies (Parviainen et al., 2017).

Innovation, as well as the ability to innovate, have been a strategic ability used to promote DT in organizations (Appio et al., 2021; Rose et al., 2016; Singh & Hess, 2017). DT is related to the creation and, consequently, the alteration of offers, which often transform and generate new processes, market and business models that directly influence the innovation process (Nambisan et al., 2017). The impact that digital innovation and the use of digital technologies bring to organizations is also directly related to DT (Legner et al., 2017).

It is a fact that DT is understood today as one of the dynamic capabilities that can bring sustainable differentiation to organizations (Ferreira et al., 2015), but it requires active leadership, possible adjustments in organizational culture, mentalities and attitudes focused on promoting recurring changes (Kraus et al., 2022).

Examining 120 research papers related to DT failure over the past 28 years, the authors Oludapo et al. (2024) identified a failure rate of 80% in the efforts of the projects carried out, reinforcing the complexity of the topic and suggesting future research agendas to validate the causes.

In addition to using scientific rigor in the unified definition of the concept of TD (Gong & Ribiere, 2021), and develop a universal taxonomy with a practical assessment model (Kao et al., 2024), other studies have reinforced that DT in organizations should be seen as an organizational change (Hanelt et al., 2021), requiring that the ambidextrous nature of DT also be explored, in view of the strategic objectives of the company and its business (Liu et al., 2023). While the seminal understandings of DT rested on only two dimensions (Leadership Capacity and Digital Capacity) (Westerman et al., 2011, 2014), new studies have shown that the capabilities needed for an organization to have its digital operation sustainable are monitored by up to nine dimensions (Favaretto, 2023): 1) Leadership, Culture & People; 2) Assistive Technologies; 3) *Data Analytics* Artificial Intelligence (AI); 4) Innovation; 5) Strategy & Business

Model; 6) Consumers & Market; 7) Partnerships & Relationships; 8) Operations & Processes; and 9) Security & Regulation.

In this transition to digital in organizations, the Leadership, Culture & People dimension is increasingly gaining prominence and importance to actually influence the DT actions and activities that are put into practice. A new role in senior leadership emerges – the role of *Chief Digital Officer* (CDO), with the responsibility of focusing on the development and implementation of the digital strategy in the organization. Systematic review of the literature (Christofi, 2024) with 29 articles published in good journals in the business area, highlighted the importance of the CDO's participation in the effective implementation of DT, as well as the positive role he plays in the results generated by the company.

The importance of organizational leadership with a focus on sustainability and digital was also reiterated by scholars (Alabdali et al., 2024), which examined the association between digital transformational leadership, digital mindset, and DT, under various combinations of organizational digital culture, when imagining a world where sustainability and DT go hand in hand.

Through a questionnaire sent to 212 respondents, the authors (Magesa & Jonathan, 2022) were able to analyse the attributes, characteristics, and functions of a convincing leader to lead DT in an organization. The study showed that attributes, characteristics, styles, and behaviors of digitally minded leaders are important agents of change for DT to occur in the organization and signalled possible strategies to be put into practice in the transformation process, not only to develop digital technologies, but to motivate employees to adopt digital technologies, aligned with the organizational culture, their beliefs, values, and behaviors. It was also reiterated by the same authors that digital leaders should remain concerned and involved in the DT process, adopting a transformational leadership style. That is, they should seek to inspire positive change in their followers, facilitate and encourage cooperation between teams, and be willing and focused on helping all members of the group succeed.

These changes will be reflected in the organization's results, by stimulating the promotion of innovation (Appio et al., 2021), the improvement of the provision of the services offered, leading to development and economic growth.

METHOD AND RESULTS

The delimitation of this single case study was based on the evaluation of a retail company of *Pet products*, codenamed VarPet, whose real name was not authorized to be disclosed. The company has a national reach, with more than 200 physical stores, three distribution centers, and the operation of an *e-commerce*, which represents approximately a third of its sales.

A case study closely observes, and in a unique way, the object studied, having a logic of planning, data collection and analysis (Riege, 2003). Case studies are an investigative strategy in which the researcher deeply explores an event, an activity, a process, or one or more individuals. Cases are related by time and/or activity (Creswell, 2010).

Data collection for this case study was carried out through individualized interviews, in person or remotely (*online*), which took place between November 2020 and March 2021, with three senior executives of the organization (employees with decision-making power), with *C-level* positions, namely: CIO (*Chief Information Officer*), CDO (*Chief Digital Officer*), and CMO (*Chief Marketing Officer*).

All three interviews were conducted in a semi-structured manner, by the first author of this article, following a pre-defined script that was divided into ten parts (numbered from 1 to 10), as reported in the section of Appendix A. This roadmap covered everything from understanding the organizational and governance structure, the dynamic capabilities of the organization, the history of the main innovations, the vision and mission of the future, to the challenges and advantages of operating in an ambidextrous environment.

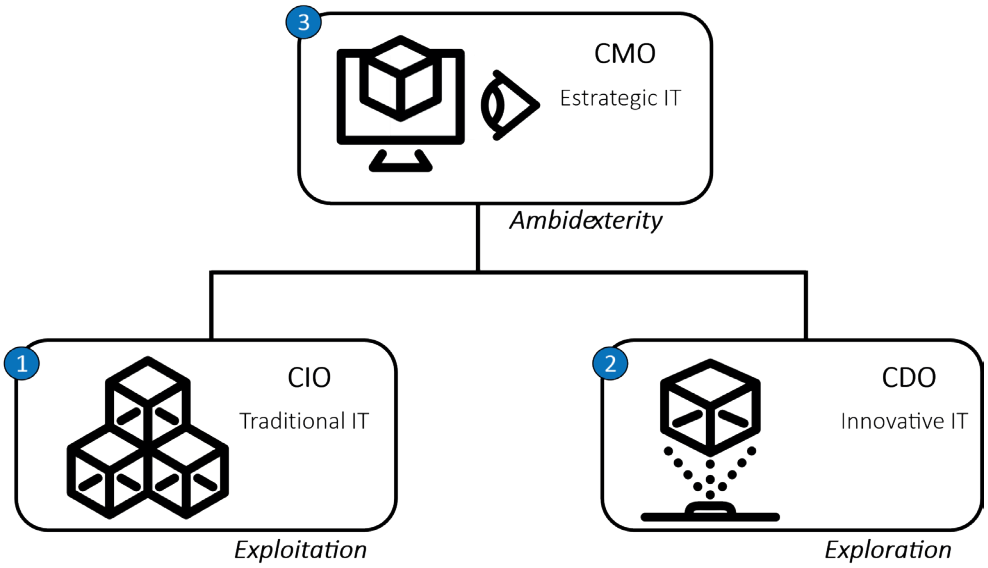
Due to the lack of permission for audio recordings of the interviews, the researcher took notes using handwriting. Subsequently, all notes were transcribed electronically, and after processing the data and information obtained, these notes were eliminated, to ensure the confidentiality of the participants, in addition to the original content that was generated.

From the materials studied in the research, including the exploration and selection of excerpts from the participants' responses, the researchers conducted the extraction of the research results, followed by the analysis and interpretation of their findings.

It was evidenced that the company VarPet used an ambidextrous IT model, as identified in the performance of its three *C-level* executives, with distinct and integrated attributions, as shown in Figure 3 and Table 1.

Figure 3

The ambidextrous IT model identified in the company VarPet



Note. Figure elaborated with icons (CC BY 3.0) adapted from korawan_m and bitfreak86 (Iconfinder, 2023a, 2023b). The responsibilities of C-executives-*levels* are distributed into: (1) CIO (*Chief Information Officer*), (2) CDO (*Chief Digital Officer*), and (3) CMO (*Chief Marketing Officer*).

Table 1

Duties and responsibilities of senior C-level executives at VarPet

Posição / *C-level*	**Foco**	**Responsabilidade**	**Apoio e Atividades**
(1) CIO (*Chief Information Officer*)	TI Tradicional (*Exploitation*)	Responsável pelos sistemas tradicionais do varejista, ERP (*Enterprise Resource Planning*), e outros sistemas de suporte às operações.	Datacenter *on premises*, *Service Desk*, suporte ao usuário, ciência de dados de apoio (clientes internos), segurança da informação.
(2) CDO (*Chief Digital Officer*)	TI Inovativa (*Exploration*)	Responsável pela Transformação Digital (TD), experiência digital e inovações do varejista.	Todos os canais digitais da empresa, *DevOps*, *SecOps*, ciência de dados para o crescimento da organização (clientes externos).
(3) CMO (*Chief Marketing Officer*)	TI Estratégica (*Ambidestria*)	Responsável que integra a diretoria de marketing, *supply chain* e TI, aglutinando as ações da TI Tradicional e TI Inovativa, de maneira estratégica.	Foco centrado no negócio, guiado de forma integrada com a gestão da transformação digital, as inovações em andamento, e as operações já existentes do varejista.

Note. IT (Information Technology); Datacenter *on premises* - structure where the company itself is responsible for processing applications; *DevOps* - integration of the words *Development* + *Operations*; *SecOps* - integration of the words *Security* + *Operations*.

Figure 3 and Table 1 illustrate the ambidextrous IT model identified in the VarPet company. In this organizational hierarchical structure, the CIO (*Chief Information Officer*), as well as the CDO (*Chief Digital Officer*), report directly to the CMO (*Chief Marketing Officer*).

Position number (1) identifies the management of Traditional IT, under the responsibility of the organization's CIO, having the role of supporting, conducting the evolution and delivery of projects related to ERPs (*Enterprise Resource Planning*) or business planning systems, which reflect on the company's core business (where its entire value chain is processed), in the network infrastructure and datacenter, in the management of services in the technology area (service center), among others. These actions were characterized as activities associated with the concept of *exploitation*.

Position number (2), under the responsibility of the CDO, identifies the management of Innovative IT, that is, all efforts that are directed towards the innovation and agile transformation of the organization and that are directly related to the company's digital systems and experiences. These actions were characterized as activities associated with the concept of *exploration*. And finally, in position number (3), it identifies the management of *Strategic IT*, under the responsibility of the CMO, with the attribution of agglutinating the actions of Traditional IT and Innovative IT, in a strategic way, focusing on the management of the strategic transformation of the organization – by orchestrating in parallel the activities of *exploitation* and *exploration*, these actions are associated with the concept of *ambidexterity* element.

ANALYSIS AND DISCUSSION

By observing the case of the company VarPet, the way it operates, the way its IT team is organized, how it conducts and manages periodic deliveries, as well as the challenges faced by the organization in the ambidextrous journey, and in the search for innovation capabilities in the corporation, it was identified that the main findings of the research corroborate the *P1 proposition*.

During the interviews with the company's executives, aspects of the organizational culture were recurrently mentioned, with the interviewees demonstrating: enthusiasm for the company's mission and vision, autonomy for creation, capacity for abstraction in the face of the financial limitations of certain projects, and quick response capacity in the face of the scenario at the height of the Covid-19 pandemic, which occurred between 2020 and 2021.

Organizational culture can be described in the context of this study (Gurbaxani & Dunkle, 2019; Hemerling et al., 2018) as a set of behaviors, beliefs and principles that serve as the basis for the formation of an organization's management system, and is usually composed of: a) the involvement and participation identified in the members of the organization; b) by the ability of organizations to adapt to external issues, above the individualism of its components; c) by adherence and consistency to all previously defined standards, and d) by the combination of economic and non-economic resources in relation to the defined strategies and objectives (Wang & Rafiq, 2014).

In this research, two perspectives studied in the literature were identified: i) the TD supported by technology, or the one that is classified as the technological basis to keep operations in full operation, ii) and the TD that changed the way the consumer of the VarPet ecosystem deals with their animals, and their retail purchases related to them (experience and customer journey).

In the exploratory analysis with the group of interviewees, following the first perspective, it was noticed that the beginning of the DT process occurred with a focus only on technology, through the launch of *VarPet's e-commerce* in 2017, conceived and driven by the leadership of the CMO executive, with the sole intention of providing an additional channel for customers, Motivated by the market movement, competition, and the macroeconomic scenario of the time - later this initial step stimulated the structural and management reorganization of the technology teams, to boost the innovation model and the intrapreneurial capacity of employees. The main purpose, with this initial change (launch of *e-commerce*), was to make VarPet more competitive and avant-garde in the segment, serving more easily and agile deliveries, within the expected journey of the TD strategy.

From the second perspective, the company highlighted among its DT activities, the focus dedicated to the customer journey, the *pet* tutor (the name given in this sector to pet owners).

In 2018, with the growth of *e-commerce*, the same CMO executive started to take on new responsibilities, having in addition to marketing, the logistics and IT processes under his leadership. He divides the IT area into two functions: one responsible for Traditional IT (*exploitation*), and another exclusively to deal with the creation, development and launch of digital products, Innovative IT (*exploration*). That same year, a VarPet mobile application was created and launched, containing the main features of *e-commerce* to be used by the *smartphone* or *tablet* of its consumers.

In 2019, the area of innovation and digital products was expanded, based on the good commercial results provided, in addition to the relevant participation (*share*) in VarPet's revenue, becoming an even more strategic part of the company, with investment lines dedicated to it. In 2020, VarPet's digital innovation strategy became a pillar valued by investors, moving from the exclusive scope in retail, to TD and innovation in the other lines of its service business (aesthetics, veterinary and adoption), to changing the customer experience in the physical environment, through the insertion of digital technologies in the chain's physical stores – for example: access to *tablets* for searching and consulting products and services, *containers* for picking up products during the pandemic, self-service service, among other initiatives.

E-commerce, logistics processes, *omnichannel* and decentralized distribution are competitive differentials in the Pet retail market segment, and part of this differential came from fostering innovation provided by the orchestration of IT and business needs, led by a single executive (CMO), who by integrating the actions of the CIO and CDO, brought innovations (*exploration*), while investing in the stability and evolution of the core retail systems that controlled physical stores and other support processes (*exploitation*).

In the Covid-19 pandemic period, several organizations had an increase in demand - supported by digitalization, and others simply closed their businesses - due to total unpreparedness to respond to the crisis (Shen et al., 2020). In the company studied, actions such as the integration of its entire value chain in the *e-commerce* that involved legacy and digital systems (examples of ambidexterity in the use of technology), allowed advantages over competitors, offering, for example, faster delivery, in addition to the launch of digital subscription services aimed at recurring purchases of products.

In the study called *Organizing for Ambidexterity*, Karrer and Fleck (2015) define four structural types of organizational ambidexterity, which are: short-term ambidexterity organizations, long-term organizations, monolithic organizations – which focus on only one of the modal sides, and finally those without any type of ambidexterity. The long-term, ambidextrous model offered the researched organization the agility and resources (with dedicated staff and methods) needed to bring innovations to the company. organization, without friction and operational complexities that already existed for Traditional IT and its legacy systems.

In addition, having a team focused on creating a *roadmap* to search for innovation and evolution of products, portfolios, and with its own architecture, infrastructure, and development structure, allowed for some autonomy in decision-making and agile implementation of scalability (such as scaling systems that showed increased use during the pandemic).

The CDO's focus (Christofi, 2024) in the evolution of products related to digital transformation and experience, proved to be valid for a better understanding of the customer journey / tutor at VarPet. The consequence of this was the evolution of the omnichannel process (or *Omnichannel*), which was the integration of all available contact channels, in an interrelated way, to allow the customer who started communication with the organization through one channel, to continue it and end it through other channels.

In addition, the good evaluation score of the apps in the virtual stores, as well as the new services launched, such as *self-checkout* and *self-delivery* – the latter, lockers for the delivery of parcel packages, were other examples of innovation put into practice by the company.

The role of organizational culture was also highlighted among the interviewees (Buvat et al., 2018; Tuukkanen et al., 2022) that does not punish error, offering an environment that encourages freedom for exploration, creation, and a focus on the ability to innovate.

Schein (1990) mentioned that organizational culture is evolved when a company learns to deal with dichotomous frictions of direction and flexibility. Therefore, the ambidextrous IT model also needs to be supported by a mature and developed organizational culture. In the case studied, cultural frictions between Traditional IT teams (*exploitation*) and Innovative IT (*exploration*) were diagnosed as persistent – here it was evidenced that the human and organizational factors should be continuously taken into account, proving to be important in the conduction of processes that address innovation and DT (El Sawy et al., 2016).

The differences in specializations between the two teams (Traditional IT and Innovative IT), the speed of action, and even divergences and generational conflicts could be clearly identified in projects with the involvement of both parties. All these factors were pointed out in the survey as restricting the process of innovation and leveraging individual initiatives at VarPet.

The complexity of the technical environment, represented by its dependence on integration with legacy systems and *Back Office*, in addition to systemic architecture challenges, were also signalled, and stood out as limiting factors in the organization's transformational process. Even with all the autonomy granted to the team led by CDO (Innovative IT) (Christofi, 2024) There is also the difficulty generated by legacy monolith systems, which support a large part of the flow of the company's value chain, such as inventory control, financial control, and *Workflows* approvals. This dependence slows down the transformational and innovative process in some parts, especially this being connected directly to the company's support areas, such as finance and human resources, for example.

The findings of this research pointed out that the integration of budget management and investments, continues to be pointed out as challenging, because, once prioritized investment in Innovative IT (*exploration*), almost always means that traditional systems under the responsibility of Traditional IT (*exploitation*), will stop evolving, This decision is difficult to make, and which has its opportunity cost (Bloomberg, 2015).

This situation was perceived in the characteristic of Traditional IT teams *versus* Innovative IT. It was noticed that the CDO (Innovative IT) team has evolved in resource capacity (technical and people) approximately three times more. The CIO (Traditional IT) team, despite VarPet's exponential growth, which went from two dozen stores to two hundred in three years, did not show the same growth.

In the management of the project portfolio and its benefits, the existence of conflicts and uncertainties of roles and responsibilities in projects that simultaneously involved the CIO and CDO was also identified in this research. Sometimes there were challenges in the division of attributions and responsibilities, cost control and reporting of results.

VarPet's challenges of ambidextrous leadership, project portfolio management and different cultures between the two teams (*exploration* and *exploitation*), can also be identified in other segments. Large corporations in Brazil, such as Rede Globo, have reorganized their teams to reduce cultural gaps, creating a set of integrated teams with deterministic visions

and missions to break the challenges of ambidexterity (Heyes et al., 2024). These actions have been positioned as cultural integrators and organizational transformation among teams – and are usually conducted with the support of the human resources department, with the active participation of technology leaders. Adopt approaches such as change management based on active participation, which can be underpinned by action research practices (Rosa et al., 2023), can be drivers of the organizational and, consequently, cultural change desired for the promotion of ambidexterity and digital transformation in organizations.

The reinforcement of a more horizontal and shared management between the two teams (Traditional IT and Innovative IT) are also being implemented at VarPet, for a correct control and visibility of roles and responsibilities, in the search for achieving joint results of technology projects. Leaders need to foster an environment that encourages autonomy, engagement, and experimentation, aligning with long-term organizational goals. This can be achieved through executive training programs focused on situational and social leadership (Pardini et al., 2012). Similar actions have been successfully applied in classic and seminal cases of ambidexterity and digital transformation, such as the Spotify and Lego organizations (El Sawy et al., 2016; Vonderau, 2019).

In short, digital transformation requires a coordinated effort to overcome cultural and leadership challenges, involving both the restructuring of processes, the continuous development of organizational competencies, and the organization's own design for ambidexterity. Best practices should be integrated into a strategic plan that considers the specific dynamics of each organization and its industry, as evidenced in the case study on pet retail.

STUDY LIMITATIONS, AND FUTURE STUDIES

Despite the methodological efforts adopted and followed by the researchers in structuring this study, in the elaboration of the interview script, in the selection and qualification of the interviewees, as well as in the treatment of the data that were collected, this research has limitations, as it explores and evaluates a single case of a company in the retail sector of *Pet* products, not allowing generalizations in other contexts or geographies.

The focus on the evaluation of VarPet's IT functions, under the conceptual lenses of ambidexterity (*exploration* and *exploitation*), and DT, was centered only on the individuals directly involved in these processes within the organization - other actors (internal and external) that could also have relevance and indirect involvement in the processes, did not participate in the study.

This study has some additional methodological limitations that deserve in-depth reflection. One of the main limitations was the impossibility of recording the audio interviews, which may have impacted the richness and accuracy of the data collected. To mitigate these risks, the researcher took detailed handwritten notes during the interviews that were transcribed electronically shortly after each interview, while the information was still active in the researcher's memory.

After transcription, a summary of key information was sent to respondents for validation, allowing for corrections or additions. In addition, the

information obtained in the interviews was compared and complemented with data from other sources, such as internal company documents (such as project portfolios, organizational charts, and description of the mission and value of the areas) and direct observations, in a process of data triangulation reflected in the content of this research.

Another potential limitation is the risk of analytical bias, given that the interpretation of the data depended heavily on the researcher's perceptions and notes. To address this issue, the data were analysed independently by two external entities (one belonging to the organization and one from outside it), which then compared their interpretations and revalidated the analysis.

These strategies aimed to increase the reliability and validity of the results, but it is important to recognize that some limitations persist. Future studies could benefit from multiple case analysis (evaluating other segments, companies, and geographies), as well as the use of audio recordings (with consent) and experimentation with this model in smaller or similar organizations to further strengthen methodological robustness.

CONCLUSION AND IMPLICATIONS

The implementation of bimodal IT, as demonstrated in the case of the pet retail company, offers a structured model to reconcile innovation and operational efficiency, two essential pillars for digital transformation (DT). This approach, based on organizational ambidexterity, allows organizations to combine *exploration* of new technologies (exploration) with optimization of existing operations (*exploitation*) (Badr, 2018).

The analysis of the challenges and practices related to the implementation of bimodal IT demonstrates that its effectiveness transcends merely structural issues. Organizational ambidexterity, that is, the balance between exploration and enjoyment, is deeply linked to human aspects, such as leadership profile, cultural alignment, and team engagement. In the specific case of VarPet, it was evident that the success in adopting this model depends not only on the organizational structure, but also on behavioral and technical competencies that allow an efficient integration between innovation and efficiency. In the company VarPet – which has such characteristics – it was found that, despite the challenges identified, the proposition P1 of this study was confirmed. Against the background of the theory of Organizational Learning, the study in question brought a modern and applied view of the term ambidexterity as a bimodal capacity relevant to conducting digital transformation in organizations. This argument is mainly demonstrated by the latest results presented by the company VarPet, where digital business and the growth of this channel represent more than 41% of its sales - a significant growth compared to the performance presented by physical channels. Customers' preference for the digital journey reinforces the consistency and ability to scale for the company within its digital transformation process (Cunha & Ribeiro, 2024).

As a practical contribution, the research generated a reference diagram with the positions of the company's *C-Level* executives (CMO, CIO, CDO), making the connection with the concepts of *Ambidexterity*, *Exploration*

and *Exploitation*. In other words, an organization with ambidextrous IT – as detailed in the diagram in Figure 3 and Table 1, which have these positions, with their roles and responsibilities defined, represents a more favorable environment for Digital Transformation, since the focus on innovation, transformation and maintenance, in addition to orchestration and connection with strategy, are under the responsibility of these figures.

In the case studied and evaluated, the creation of the definitive ambidextrous environment, that is, long-term, provided greater speed, resources and focus for innovation. The dedicated teams, organized by products, with independent leaders and with specific knowledge focused on DT, in addition to the involvement of agile concepts in their work methodologies, have made the growth of VarPet's digital business relevant and constant over the last few years.

It was also noted that, in addition to individual interests and conflicts, there are the models and strategies defined for the business. This point had already been explored and identified in previous studies (Gundogdu, 2012) and could be seen in this case of VarPet, which demonstrated that the issue of ambidexterity and the balance between the *exploration* and *exploitation* It is more than a matter of organizational structure. It is a topic that encompasses individual characteristics and the involvement of people who can act and focus on both aspects in a competent and focused way (Gibson & Birkinshaw, 2004).

With the institution of a single and orchestrating governance (integrated) with a leader (CMO), with active participation in the integration of project results reports between the other two subordinate teams (the CIO and the CDO), as well as in the definition of projects and prioritization of these for the business, they were implemented as emergency actions to reduce the *gaps* between the teams.

The recurrent reinforcement of the alignment of IT with the business, the success of DT strategies and the offer of innovative solutions to customers in an increasingly dynamic, demanding and digital market, were supported by the ambidextrous model identified in the case.

In short, managers who want to implement bimodal IT must be aware of the need for ambidextrous leaders, capable of moving between long-term strategic visions and immediate operational demands. In addition, it is crucial to create an organizational culture that values collaboration between teams with distinct but complementary objectives, promoting effective communication and integrated resource management. This implies investment in training, both technical and behavioral, to train professionals able to navigate between the two modes of work, as well as the establishment of performance metrics that recognize the value of both innovation and efficiency.

In addition, for bimodal IT to be successful, it is recommended that organizations adopt an adaptable governance model, which favors the autonomy of innovative teams without compromising operational stability. This approach must be accompanied by clear and constant communication of strategic objectives, to engage all levels of the organization around a common vision. In this way, managers will be able to balance the demands of exploring new opportunities with the need to take advantage of existing resources, achieving sustainable results aligned with organizational objectives through ambidexterity, which will be a valuable and fundamental resource for the promotion of Digital Transformation.

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APENDIX A

Roadmap for the evaluation of the case study

1. Describe the institutional characteristics of the company, according to the items below, but not limited to these:

   - Business model;
   - Main product lines (goods and services);
   - Number of physical stores;
   - Number of employees;
   - IT employees;
   - Number of customers;
   - Types of customer outreach channels;
   - Electronic commerce (e-commerce) - historical and current stage;
   - Total or % revenue per channel;
   - % billing subscription services;
   - IT budget;
   - Revenue and results for the last year;
   - Digital innovations and products (evolution and deliveries).

2. Describe the structure of the IT function, its organizational chart, roles and responsibilities, and other relevant information regarding the IT model and organization.
3. Has the ambidextrous IT model been applied to your organization? If so, describe how it began to be used, and the advantages and disadvantages of the model, according to your practical experience.
4. Describe the main business units that relate to IT and/or *the digital* function, their roles and responsibilities, and how this relationship occurs (model, periodicity, objectives, etc.).
5. Describe the IT governance model applied and detail the dimensions of governance: the focus (what to govern), the scope (actors and *stakeholders*, who governs), governance standards (how to govern, mechanisms for governance).
6. How has innovation and Digital Transformation (DT) been applied in the company? If possible, indicate numbers, presentations, etc. to help understand the objective of the projects, intended results vs. obtained. Indicate and give examples of successful digital or innovative projects, as well as lessons learned from those projects that *were not so successful*.
7. How has the use of data and consumer experience in digital channels fed back into the business and digital strategy, in addition to boosting the organization's business models? Could you give examples of projects and results related to data processing, and the impact on the user experience?

8. What are the main advantages and challenges in the governance model that the company currently has in place? How have they been addressed and managed to overcome challenges or maximize results?
9. As a leader of your organization, in your understanding, what are the most relevant factors for the promotion of DT?
10. At what level of DT maturity do you understand your organization is currently positioned?

NOTES

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