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# Blacksmith's house, wooden knives: why do legacy firms succeed in promoting digital outcomes but struggle with the digital transformation of their existing business models?

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## Abstract

Although research recognizes that legacy firms struggle with digital transformation, frequently abandoning initiatives, the underlying mechanisms remain a black box. To tackle this issue, we adopt an Attention-based view lens and follow a multiple case study design with five Brazilian legacy firms as a methodological approach. We draw evidence from longitudinal data spanning six years (2016–2021), triangulating archival data from the companies' annual reports with their websites and formal and informal interviews. Our findings reveal the interplay between attention shortsightedness, resulting in temporal myopia, and the mechanisms that we call the 'spinning the slots' for DT and 'trendy decision-making' to explain the procedural inconsistency. Therefore, we contribute to DT literature in several ways. First, we expand the DT literature by uncovering strategy-making mechanisms underlying legacy firms' struggle with DT. Second, we challenge the overall positive vision of DT as an enabler of more rational strategic decision-making. We discuss that ambiguity and attention conflicts can lead to silos of garbage can decision-making, where DT can be a result of chance rather than increased rational decisions.

**Keywords** Digital transformation · Attention-based view · Temporal myopia · Garbage can · Strategic decision making · Legacy firms

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## 1 Introduction

Legacy Firms— defined as brick-and-mortar companies founded before the digital era (Kopalle et al. 2020)— often struggle with digital transformation (DT) (McKinsey 2018) and frequently stop initial DT initiatives (McKinsey 2020; Sund et al. 2021). A BCG (2022) study shows that only 30% of the 1200 companies in the S&P Global Index can be considered “digitalized” legacy firms. Despite their superior performance compared to their non-digitalized counterparts, they are far behind the digital natives (i.e., companies founded in the digital era, such as Netflix and Uber) regarding agility, innovation, and digital talent (BCG 2022).

The reason for such digitalization lag in legacy firms emerges from the complexity and uncertainty of the DT as compared to other transformative requirements, such as Information Technology (IT) integration (D’Angelo et al. 2024; Wessel et al. 2021). Incumbents often delay their response to disruptive and holistic changes that encompass changes in the business model, involving transformations beyond technological advancements in products and processes (Christensen 1997; Cozzolino et al. 2018). DT requires legacy firms not only to promote digital outcomes such as digital products (Barrane et al. 2021), services (Frank et al. 2019) or processes (Baiyere et al. 2020), but also to digitally transform themselves (Buck et al. 2023), acquiring new talents (Montero Guerra et al. 2023), reshaping resources and capabilities (Oberländer et al. 2021), rethinking business processes (Hartley and Sawaya 2019) and transforming their existing business model(s) (Klos et al. 2023; Verhoef et al. 2021).

Despite this complexity surrounding DT in Legacy firms, we still know little about the underlying strategy-making and the role of decision-makers (Browder et al. 2024; Simsek et al. 2024). The success of DT in legacy firms is often defined and measured based on producing digital outcomes (e.g., El Sawy et al. 2016; Gomes et al. 2024; He et al. 2024; Sund et al. 2021), which intensifies the issue. However, DT involves changes more profound than the superficial transformation of analogical processes into digital (i.e., digitization) and incorporating IT into the business processes (i.e., digitalization), but a complete rewiring of the existing business model (Soluk and Kammerlander 2021; Verhoef et al. 2021; Wessel et al. 2021). The consequent problem is that DT often threatens the company’s identity, which research has shown to happen in case of disruption that impacts strategy-making (Kammerlander et al. 2018). This underlying uncertainty and ambiguity involved strikingly differ DT from digitization, digitalization, and the development of digital outcomes. The focus on evaluating DT based on digital outcomes can be, therefore, quite problematic, failing to capture its overall complexity. Indeed, research shows that legacy firms’ strategy-making is more chaotic than linear (Chaniyas et al. 2019) and that decision-makers have a prominent role in shaping it (Bouncken et al. 2021). Nevertheless, despite acknowledgments that legacy firms struggle with DT and that strategy-making is likely chaotic, we still know little about the underlying mechanisms that explain why legacy firms struggle with DT (D’Angelo et al. 2024; Oludapo et al. 2024). Aiming to tackle this research problem and further refine our understanding of the phenomenon,

we propose the following research question: Why do legacy firms struggle with DT efforts?

To answer this question, we leverage the Attention-Based View (ABV) theory (Ocasio 1997; Ocasio et al. 2018) to explore the interlinks between decision-makers attention, their strategic making and how it unfolds into organizational structuring and actions regarding DT in legacy firms. We follow a multiple case study design with five leading Brazilian legacy firms as a methodological approach. We draw on evidence from longitudinal data spanning a period of six years (2016–2021), triangulating archival data from the companies' annual reports (average 110,000 words per company throughout the entire period) and the companies' websites, with formal interviews with top managers, middle managers and informal interviews with employees from operations (e.g., R&D personnel).

We, therefore, expand and challenge the DT literature by uncovering the inter-related attention mechanisms that result in the “spinning the slots” and the “trendy decision-making.” Our findings show that the attention shortsightedness, resulting in temporal myopia, acts together with what we call the ‘spinning the slots’ for DT and ‘trendy decision-making.’ In the former mechanism, companies delegate new digital transformation responsibilities to senior executives (e.g., CXOs, vice presidents), broadening their roles to encompass key functions such as R&D and IT. Inside the new structures, in turn, companies implement trendy actions and organizational forms (e.g., hackathons, agile, Spotify Squads) without matching and aligning with the existing business model or reinventing the business model and coherently integrating the practices. The manager and the structure responsible for DT were frequently changed in cases of low performance, thus “spinning the slots” for DT. These mechanisms help explain the process's randomness, shedding light on why legacy firms struggle with the DT. Thus, we open this black box and shed light on what leads to such procedural inconsistency.

Our study contributes to DT literature in several ways. First, we expand the DT literature by uncovering strategy-making mechanisms underlying legacy firms' struggle with DT. We reveal conflicts between central and distributed organizational attention's focus under temporal myopia due to overly assigning relevance to other financial attention magnets. Our study expands the literature by evidencing how relying on existing business models might hinder DT and why transformative efforts might lead to procedural consistency. Second, we challenge the overall positive vision of DT as an enabler of more rational strategic decision-making on the DT. We discuss that ambiguity and attention conflicts can lead to silos of garbage can decision-making, in which the DT outcome can be a result of chance (“spinning the slots” and “trendy decision making”) rather than on increased rational decisions. Therefore, we add a relevant discussion by providing an explanation for the somewhat random performance of legacy firms' DT efforts.

## 2 Theoretical background

### 2.1 Digital transformation in legacy firms

Digital transformation (DT) refers to the fundamental rewiring of how an organization operates, using digital technologies to create value and deliver better customer experiences (Verhoef et al. 2021). DT affects almost every dimension of a company's business model across every industry by enabling new products, processes, and business models that can disrupt existing ones (Klos et al. 2023). Digital native companies, in contrast to legacy firms, are founded in the digital era and have digital technologies at their core (Monaghan et al. 2020). They often display a startup mindset and agile approach, emphasizing being lean, fast, and scalable (Gartner and Moro 2024). Digital natives were founded based on the principles of the digital era, and their business model emerged as digital by definition.

In contrast, DT for legacy firms involves holistic changes that encompass generating digital outcomes while digitally transforming the existing business model (Verhoef et al. 2021). On the outcome side, firms can deliver new digital products, services, and business models (Li 2020; Oberländer et al. 2021). The literature has, so far, devoted significant attention to this aspect, emphasizing opportunities enabled by digital technologies (e.g., Burström et al. 2021; Khalil et al. 2023; Massaro 2023; Volberda et al. 2021), that can bring significant benefits for legacy firms (Dąbrowska et al. 2022; Zhang et al. 2023). In particular, increased customer loyalty (Fernández-Rovira et al. 2021) and market share (Alrawadieh et al. 2021) and performance gains (Warner and Wäger 2019). Lego's substantial performance gains from introducing digital games and platforms (El Sawy et al. 2016) illustrate such benefits.

However, producing digital outcomes represents only a partial view of DT for legacy firms. Such an imbalance probably stems from the different nature of DT when compared to digital natives, whose focus lies on digital outcomes and creating novel entrepreneurship practices to enter the market. Legacy firms' DT requires overcoming challenges and barriers related to their pre-digital machinery, such as legacy systems, processes, culture, and mindset (Leeflang et al. 2014). Therefore, legacy firms must reframe their offerings and reinvent their business model and position within the ecosystem. Hence, it goes beyond the mere transformation of analogical systems into digital ones to improve productivity (e.g., Buck et al. 2023; Montero Guerra et al. 2023).

These aspects of DT are interrelated and require a holistic and strategic approach to achieve the desired outcomes, the so-called "going digital." This dimension often requires hiring and adjusting the human talent base. The challenge is that attracting, developing, and retaining the skills and competencies for the DT, such as data literacy, creativity, and collaboration, are often not freely available (Fernandez-Vidal et al. 2022). Further, talented people might be unwilling to join legacy firms. Additionally, the literature highlights the relevance of changing organizational culture, which requires a long-term structured approach, top management support, resource commitment, and empowering employees to make decisions and take risks (Volberda et al. 2021). Furthermore, how legacy firms are structured, organized, and governed is often incompatible with digital paradigms. Going digital also captures these dimen-

sions, highlighting aspects such as creating cross-functional teams, flattening hierarchies, and enabling agile and flexible work practices (Hanelt et al. 2021).

In sum, DT is a long-term and resource-intensive endeavor that involves high uncertainty. Because of that, research suggests that legacy firms should initiate their DT early before the threat from entrants becomes too intense (Klos et al. 2023). However, as previous research has shown, the key problem with this notion is that incumbents tend to face a delay in recognizing, organizing, and responding to disruptive changes (Cozzolino et al. 2018). Legacy firms may frequently react to DT when the threats and time pressures are already high. Thus, facing the challenge of delivering digital outcomes and going digital simultaneously, and in many instances with decreasing performance due to the turbulent environment and changing competitive conditions (Schauerte et al. 2024).

Together, these arguments suggest a complex and paradoxical situation. Delivering digital outcomes, theoretically, requires new capabilities, processes, and mindsets that are often different from or even incompatible with the existing ones (Brekke et al. 2024; Volberda et al. 2021). At the same time, going digital involves transforming the existing business model(s), which can be risky, costly, and disruptive, while improving the capability to deliver digital outcomes. It creates a situation where there is a need to balance competing demands of innovation and efficiency, exploration and exploitation, and short-term and long-term goals. A scenario that may lead legacy firms to face dysfunctions. In particular when the disruption challenges the existing identity while offering benefits to the company (Kammerlander et al. 2018). Digital outcomes may provide clear benefits, while going digital often generates conflicts with existing business models, threatening identity and offering unclear benefits. This duality can be overwhelming for top management, who lead the change and must maneuver their organization and accomplish results, creating paradoxes and challenges to overcome (Putra et al. 2024). Under this scenario, we argue that organizational attention, a strategic, necessary, and scarce resource, will be divided and thus compromised by this situation, which we discuss in the following section.

## 2.2 Organizational attention and Digital Transformation strategy in legacy firms

Attention-based View (ABV) theorists reinforce that the top management team's goal setting and resource allocation depends on organizational attention, which is defined as "noticing, encoding, interpreting, and focusing of time and effort by decision-makers" on issues and responses (Ocasio 1997: 189). At the core, the ABV theory seeks to explain organizational behavior by emphasizing that managers display bounded rationality and, therefore, can devote attention to a limited set of issues and response initiatives (Haas et al. 2015). The focus of attention depends on how decision-makers interpret the situational context, translating into strategy and structures to distribute the attention (Ocasio 2011; Plotnikova et al. 2024). Hence, attention stems from situational, structural, and cognitive factors, which enable and constrain organizational actors' choice opportunities and decision processes. Indeed, research on ABV reveals that the organizational attention of top managers influences strategy development (Cho and Hambrick 2006), the evolution of organizational structures (Dutt and

Joseph 2019), and the pursuit of entrepreneurship and innovation (Eggers and Kaplan 2009).

Digital transformation in legacy firms requires organizational changes at the strategic level. Hence, the role of top management teams is prominent, shaping strategic direction, allocating resources, and coordinating efforts. Despite being neglected by the DT literature, organizational attention may provide a crucial lens to advance our knowledge. DT is an uncertain endeavor that involves numerous focal points of change that require significant investments, are resource-intensive, and operate under time pressures. Legacy firms are constrained by the interest and pressure of their stakeholders, such as shareholders (Sund et al. 2021), customers, and other value chain players (Rijswijk et al. 2023). Consequently, this limits investment flexibility and the freedom to change the business model, culminating in additional pressure to deliver financial returns.

This situation might lead to what the literature calls “temporal myopia,” defined as “a narrow view of actors, events, and trends in the company’s environment, combined with time preferences” (Czakon et al. 2023: 1). Because of the persistence of multiple attention magnets, organizational attention might be pulled toward the incremental direction, focusing on achieving short-term goals rather than pursuing ambitious long-term objectives (Chung and Low 2022; Edmans 2009). As organizational attention stems from managerial limited rationality and the organizational and situational context, legacy firms might display limited power in interpreting and focusing their time on the holistic nature of DT. They risk narrowing their attention to responding to those pressures to deliver fast results. Under this situation emerges a paradox of conflicting new and old that can confound managers (Smith and Beretta 2021), which can cause myopic actions resulting in underwhelming goal setting and poor resource allocation.

Therefore, the pressure to achieve digital outcomes might lead top managers of legacy firms to overfocus their attention on this issue. According to the ABV, they would mobilize and deploy resources to this goal, as the situational context of shareholders and stakeholders would impose higher demands on digital outcomes, as those are visible and tangible. Further, it might improve the company’s reputation and generate quicker financial returns. In sharp contrast, digitally transforming the existing business model is less tangible and demands high upfront investments to cope with uncertainty through experimentation. The investments might, therefore, fail to generate timely returns and suffer from criticism for not fulfilling shareholders’ expectations (Sund et al. 2021), leading legacy firms to abandon their initiatives.

Despite the relevance of organizational attention in shaping top managers’ decision-making regarding strategy formulation and organizational structure definition, we still know little about its underpinnings for DT (Bouncken et al. 2021). Studies often investigate anecdotal cases of how specific organizations achieved digital outcomes and which digital outcomes are possible. We still lack knowledge regarding the digital transformation of the existing business models of legacy firms. Although scholars widely recognize that legacy firms struggle and lag in these areas, displaying poor results in digitally transforming themselves, the mechanisms and reasons behind these challenges remain unclear.

## 3 Methods

### 3.1 Research context

The research context for our study is Brazil. The selection of Brazilian entities for this study is grounded in several compelling reasons related to the Brazilian market's unique characteristics and their relevance to the study's objectives. Brazil is the largest economy in Latin America and ranks among the top 10 largest economies in the world, with a GDP of approximately USD 2 trillion in 2023 (World Bank 2023). Its diverse industrial base, spanning agriculture, mining, manufacturing, and services, provides a robust backdrop for studying DT in legacy firms. The country's significant consumer market, with over 200 million people (IBGE 2022), further emphasizes the relevance of examining how traditional companies adapt to digital changes.

In recent years, Brazil has pushed innovation and digitalization. According to the Global Innovation Index, Brazil ranks among the top 50 out of 132 economies in 2023, reflecting its growing emphasis on innovation (World Intellectual Property Organization (WIPO), 2023). As noted by OECD (2020), Brazil's DT efforts encompass a broad range of policies and initiatives designed to foster digital adoption across various sectors, which can enhance the productivity and innovation capacity of the Brazilian economy. A notable example of the government's efforts to strengthen digital infrastructure is the implementation of the PIX payment system by the Central Bank of Brazil in November 2020. PIX allows for instant payments 24/7, and within its first year, it registered over 96 million users and processed more than 8.5 billion transactions (Deloitte 2022). By December 2021, PIX accounted for 20% of all transactions in Brazil, showcasing digital payment solutions' rapid adoption and impact (Deloitte 2022).

### 3.2 Research Methodology

This study aims to tackle the complex phenomena of organizational attention and how it influences DT in large legacy firms. Notably, we strive to answer why such a complex social phenomenon occurs. To do so, we adopt a multiple case study design (Yin 2017), which enables us to draw rich and nuanced insights from various data sources (Eisenhardt 1989). This choice follows recommendations to tackle poorly understood complex social phenomena (Eisenhardt 2021; Eisenhardt and Graebner 2007), which is the case with DT in legacy firms. We follow an inductive approach that aims to develop theory (Eisenhardt and Graebner 2007) and a longitudinal perspective spanning six years (2016–2021) to capture the dynamic and evolving nature of the strategic decisions and organizational changes related to DT (Yin 2017), considering that DT unfolds over several years.

### 3.3 Case selection

Case selection is one of the cornerstones of a case study research design (Eisenhardt 1989). Considering our aim to investigate legacy firms, we focused on Brazil's available lists of leading companies. Formal and reliable sources, such as *Revista Istoe*,

conduct those listings. We merged this list with a Brazilian innovation ranking conducted by *Valor Econômico* together with the consultancy group *PwC*, which has the following ranking criteria: (1) intention to innovate, measured in terms of strategy, vision, culture and values; (2) Innovation effort, in terms of resources processes and structure to innovate; (3) innovation results, measured in terms of new products, services and processes; (4) market evaluation of the company, in terms of citations and recognition (Strategy& & Valor Econômico, 2024). By doing so, we sought to limit our sample to organizations (1) founded before the digital era, (2) are brick and mortar, (3) do not have digital technologies as their core technological base (i.e., IT has the traditional supporting role rather than strategic) and (4) produce innovation outcomes regularly.

To further refine our selection, we deeply explored the DT context in Brazil through direct engagement by one of the authors with innovation managers from various companies to identify those that achieved digital outcomes. Aligned with the study's goal, we narrowed our selection space to legacy firms that have succeeded in delivering digital outcomes. To this end, we analyzed the news, new products, and service announcements and investigated existing stakeholders' opinions. Therefore, pinpointing companies with high frequency in announcements of digital outcomes and a presence on marketing through online channels.

Based on this population, we deployed a theoretical sampling approach to select companies according to the following criteria: (1) The companies need to fall inside the definition of legacy firms. We combined the *Revista Istoe* listing of large Brazilian companies, filtering the foundation year to before the 1990s when is considered the widespread diffusion of the internet technology (Kiiski and Pohjola 2002); (2) They have proven to succeed in deploying digital outcomes, which we secured through the coupling between *Revista Istoe* and *PwC* innovation ranking and our analysis; (3) Companies should have a technological base that is unrelated to digital technologies to secure internal validity (i.e., not in the information technology sector) and they should stem from different industrial sectors to improve the study's external validity; (4) the cases should have operations inside Brazil; and (5) due to the context in Brazil, we sought to have at least one multinational company, as they behave differently in the DT (Del Giudice et al. 2021). Our final sample comprises five companies, described in Table 1.

**Table 1** Description of cases

Case	Employees number	Industry sector	Position on innovation ranking (valor economico and PwC)	Year of establishment
B2B Solutions	~10.000	Automotive and Large Vehicles	2	1910
Sustainable Care	~35,000	Cosmetics, Hygiene and Cleaning	1	1969
Deep Energy	~45,000	Oil, Gas and Petrochemicals	1	1953
Building Materials	~13.000	Construction Materials	3	1933
Health Services	~13.500	Medical Services	4	1926

### 3.4 Data collection and analysis

Our data collection strategy focused on triangulating archival and documental data with interviews (Corbin and Strauss 2015; Yin 2017). Following a semi-structured interview approach, we had at least three interviews per case, with an average duration of 60 min. To select the interviewees, we ensured representation from multiple perspectives: (1) at least one member of the top management team, (2) at least one member from the newly established structures responsible for driving DT, and (3) one of the authors engaged with various members across the studied cases, conducting several informal interviews with individuals in different positions to gather additional insights and updates. The rationale for this selection strategy was to minimize informant bias and incorporate diverse perspectives, enabling the identification and reconciliation of conflicting or contradictory information (Williams and Shepherd 2017).

The paradoxical nature of our research question raises concerns, especially when combined with previous studies highlighting potential respondent bias among informants deeply immersed in the studied process (Ernst and Teichert 1998). As a result, relying solely on interviews could lead to misinterpretation and inaccuracy. Key informants who are deeply involved in the process may overestimate their actions, potentially blurring the understanding of the studied phenomenon. Leveraging rich archival data is particularly relevant because it provides an objective perspective. Hence, we thoroughly analyzed the annual reports that the selected companies must file. The advantage of these report filings is that they often encapsulate the managerial perception and are reliable sources for longitudinal research strategy.

We focused on the sections that provide information about the perception of environmental conditions, the strategic intention, and actions regarding digital outcomes and going digital. Although the exact names of the sections vary across the cases, they can be summarized as follows: foreword from the top management team, external environment, corporate strategy, the business model, and corporate governance and structure. Furthermore, the cases exhibit significant variations in the level of detail provided. While some companies offer comprehensive information, such as insights into their organizational structure, top management team, or specific digital transformation initiatives, others provide only limited details. To cover this issue, we also analyzed the companies' websites over the same years (2016–2021). We used the Web archive from the Wayback Machine (<https://web.archive.org/>), which stores the past versions of websites. Table 2 contains a summary of the data collection sources.

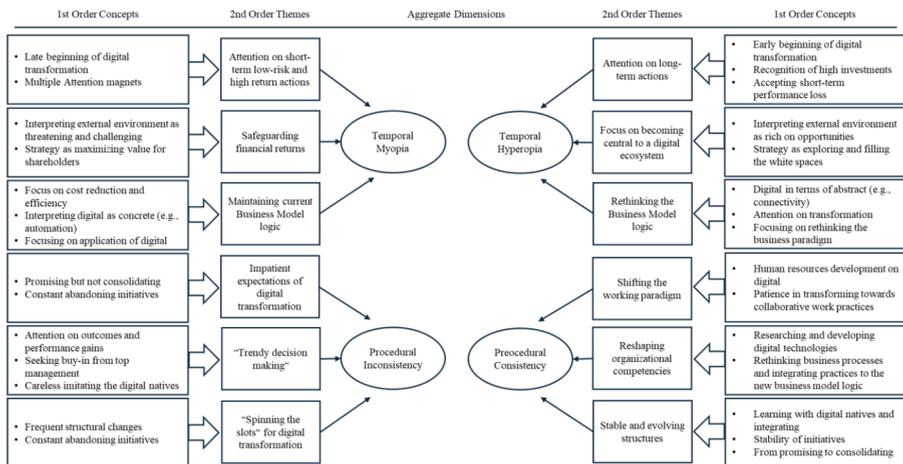
To analyze the data, we followed recommendations for open coding, axial coding, and structural coding as data analysis procedures (Corbin and Strauss 2015; Yin 2017). We first analyzed each case individually through open coding. In this stage, the analysis follows an open-mind conceptualization, looking for emerging patterns in the data in an inductive manner. After completing the open coding, we conducted a cross-case analysis using axial coding to identify commonalities and differences across cases. Finally, after individual and cross-case analysis, we conducted structural coding to extract concepts and observable phenomena emerging from the case studies. Therefore, we sought to build theories from the cases, following the approach outlined by Eisenhardt (1989) and Magnani and Gioia (2023).

**Table 2** Data collection sources

Case	Annual reports	Sections analyzed	Interviews	Additional Data sources
B2B Solutions	2016 (45/163 pages, ~19,500 words); 2017 (38/154 pages, ~16,000 words); 2018 (42/168 pages, ~17,300 words); 2019 (42/164 pages, ~18,500 words); 2020 (44/170 pages, ~17,500 words); 2021 (54/226 pages, ~20,950 words); Total (265/1045 pages, ~109,750 words)	Introduction, Leadership structure, and role description, Summary, strategy, innovation and management report	1) Innovation and IP Manager, 46 years, Male (~60 min); 2) New business Platform Manager, 50 years, male (~90 min); 3) New business Platform Specialist, 36 years, male (~60 min);	Websites (2016–2022) using the Wayback machine; Sections: strategy, structure, vision, announcements, and news.
Sustainable Care	2016 (56/152 pages, ~23,600 words); 2017 (29/121 pages, ~12,106 words); 2018 (26/125 pages, ~11,500 words); 2019 (94/219 pages, ~17,800 words); 2020 (68/184 pages, ~24,900 words); 2021 (80/239 pages, ~21,900 words); Total (353/1040 pages, ~111,806 words)	Introduction; message from the top management team, about the company, strategy, business model and innovation, corporate governance, products and concepts, and processes.	1) Chief Technology Officer and Digital Innovation, 42 years, male (~60 min); 2) Innovation Analyst, 32 years, female (~25 min); 3) Startup Ventures Program Senior Manager, 34 years, female (~60 min).	Websites (2016–2022) using the Wayback machine; Sections: innovation, strategy, governance and announcements and news.
Deep Energy	2016 (29/102 pages, ~10,000 words); 2017 (42/135 pages, ~14,000 words); 2018 (52/130 pages, ~15,800 words); 2019 (20/38 pages, ~6,100 words); 2020 (31/68 pages, ~8,900 words); 2021 (18/65 pages, ~5,900 words); Total (192/538 pages, ~60,900 words)	Foreword from top management team; Corporate Strategy; External environment; Innovation, technology and R&D; Organizational structure and investments	1) Dx and Innovation Manager, 37 years, male (~60 min); 2) Data Scientist (PhD), 41 years, male (~90 min); 3) Data Scientist, 31 years, male (~45 min); 4) S&T Networking Manager (PhD), 40 years, male (~60 min).	Websites (2016–2022) using the Wayback machine; Sections: Organizational structure, top management teams' roles; Strategy and innovation.
Building Materials	2016 (61/114 pages, ~17,600 words); 2017 (46/244 pages, ~12,500 words); 2018 (32/103 pages, ~14,700 words); 2019 (36/102 pages, ~15,500 words); 2020 (46/149 pages, ~16,700 words); 2021 (32/115 pages, ~13,800 words); Total (253/827 pages, ~90,800 words)	Foreword from top management team; Highlights; Strategy and Business model; Governance; Challenges and opportunities; Value generation; People and culture	1) Consultant of Global Solutions and Architecture, 55 years, male (~90 min); 2) Innovation Manager, 42 years, male (~35 min); 3) Informal interview with R&D and new business personnel (~30 min)	Websites (2016–2022) using the Wayback machine; Sections: Investors channel, organizational structure, and strategy

**Table 2** (continued)

Case	Annual reports	Sections analyzed	Interviews	Additional Data sources
Health Services	2016 (16/19 pages, ~ 3,750 words); 2017 (17/21 pages, ~ 5,045 words); 2018 (19/24 pages, ~ 6,650 words); 2019 (20/24 pages, ~ 7,000 words); 2020 (22/26 pages, ~ 7,500 words); 2021 (23/29 pages, ~ 8,300 words); Total (117/143 pages, ~ 38,245 words)	Message from top management team; Economy and external environment; About us; Strategy, business model and innovation; Corporate governance	1) CEO, 54 years, female (~ 60 min); 2) Strategy, Innovation and New Businesses Senior Manager, 42 years, male (~ 45 min); 3) Informal interview with Digitalization personnel (~ 15 min)	Websites (2016–2021) using the Wayback machine; Sections including innovation, governance structure, strategy, and vision



**Fig. 1** Coding structure

In particular, and in line with the definition of organizational attention, we have investigated how the companies interpreted the external environment and how it unfolds into encoding and action-making through strategy, structure, and actions regarding digital outcomes and going digital. Furthermore, we analyzed the wordings used in the reports as they convey information regarding encoding and interpreting. We analyzed the wording related to the degree of change, ranging from maximize, optimize, and strengthen to transforming or reinventing, and the wording regarding planning and consolidating digital transformation actions through the longitudinal setting of our study. Figure 1 contains the coding structure.

Figure 1 stems directly from our coding process, where we identified specific concepts in the data (1st Order Concepts), grouped them into broader themes (2nd Order Themes), and then distilled these into overarching insights (Aggregate Dimensions). This progression through open, axial, and structural coding allowed us to analyze complex information systematically. These figures play a crucial role in addressing

our research question. For instance, we highlight the challenges legacy firms face during digital transformation, such as constantly shifting strategies (“Spinning the slots” and “trendy decision making”). Meanwhile, we offer contrasting codings that illustrate the procedural consistent approaches, like maintaining a focus on long-term goals, evolving stable structures, and organizational attention to going digital.

## 4 Results of the case studies

### 4.1 The focus of attention: Environment interpretation and digital strategy formulation

B2B Solutions is a subsidiary of a global company operating in various B2B and B2C sectors. Its primary focus in Brazil is the automotive parts sector, one of the country’s largest industries. Although recognizing potential challenges in the environment during the period, its emphasis is on the opportunities generated by a connected, digital world. Among our sample, the company was the first to start the DT. B2B Solutions created a Venture Capital department in 2009, aiming to learn with startups to acquire digital talents and knowledge. Thereby, B2B solutions set the DT strategy to establish itself as a global leader and an epicenter of a connected digital ecosystem in Artificial Intelligence (AI) and the Internet of Things (IoT). As such, the central focus was on completely transforming its business model and becoming the epicenter of an IoT digital ecosystem. To achieve this goal, the top management team has dedicated efforts to this initiative, allocating resources and establishing organizational structures to change its existing business model and to develop new business models based on AI and IoT. The company has successfully implemented several of these models across different business units.

Sustainable Care is a worldwide business and the leading company in Brazil’s domestic market for personal care products, ranking fourth globally. It started its DT relatively late, in 2014, with a strategy centered around digitizing its sales team. The underlying strategy was improving the current business model, aiming at efficiency gains and reducing costs. This strategy stems from an overall perception of an environment in crisis, which is challenging, uncertain, and threatening. Consequently, Sustainable Care’s interpretation of the environment and its strategic focus resulted in the action to transform the analog sales representative process into a digital one. Sustainable Care launched an app that transformed its sales process by replacing the traditional word-of-mouth sales process and physical promotional booklets with digital alternatives. The project proved successful, prompting the board to elevate its digital transformation ambitions. The new objectives include reducing product development times, introducing new digital services, and utilizing customer behavior data as inputs for product development. Additionally, recognizing the opportunities digitalization presents, the board and leaders have decided to make modest investments in exploring innovative ways of conducting business. At the core, it focused on creating digital services related to its mainstream products and markets.

Deep Energy is a Brazilian company with a global footprint, ranking among the top ten energy businesses globally and leading innovation in the sector. The company

has had several attention magnets in the period because of high financial debts, corruption, accidents, and shareholder pressure. Thus, the company interpreted the overall scenario negatively, emphasizing the threats, challenges, and high uncertainty. Consequently, its DT efforts began only in 2016, when the company's leaders rushed to position DT as the core of their strategy. The central goal was to optimize all business processes, reduce costs, achieve productivity gains, reduce R&D times, and develop novel digital technology products. Given the high capital intensity typical in natural resources exploration industries, Deep Energy was less inclined to engage primarily or exclusively in digital services businesses. Nevertheless, the company invested substantially in R&D projects, developing its AI and Data Analytics solutions for geophysics and geomechanics modeling.

Building Materials is the largest Brazilian company in the construction materials sector, contributing 7% to the country's GDP. Like Deep Energy, the company started the DT around 2016, focusing strongly on the existing business model. Due to the commodity market's less favorable conditions, the crisis deeply affected the company. Consequently, there was a negative overall perception of the environment, interpreted as challenging for the company. The company, therefore, placed its digital strategy to leverage digital opportunities to overcome the crisis. This perception unfolds as Building Materials focuses on improving and optimizing its existing business model with a digital strategy that revolves around increasing productivity, reducing costs, and increasing sales efficiency. Recognizing its relatively stable industrial sector position, the company has sensibly focused on operational excellence. This strategy involves improving the existing business model rather than initiating substantial changes or creating entirely new digital offerings.

Health Services stands at the forefront of the medical diagnostic tests sector in the Brazilian industry and Latin America, playing a vital role in the country's health sector. The group is also a pioneer in innovation within the Latin American market, emphasizing the creation of new businesses that harness digital technologies and engage in research and development in genomics and bioinformatics. The DT strategy and focal point revolved around integrating interactions among patients, doctors, and health insurers through platforms and crafting innovative digital offerings. A noteworthy digital outcome was establishing a separate company operating Brazil's first multisided health services platform. This marketplace connects various health services providers, offering integrated access for patients.

#### **4.2 Structuring for digital transformation: spinning the slots or counting the cards?**

The studied cases, as expected, developed specific structures to execute their DT strategy. They all recognized the complexity of the issue and the need to position DT at the executive level to drive the organization in the expected direction. Consequently, although the specific starting points varied slightly, the main logic involved creating and assigning responsibility to a new and autonomous department at the C-Suite level. Among the studied cases, B2B Solutions and Health Services achieved better results, while Deep Energy, Sustainable Care, and Building Materials had different challenges. In the underlying analysis of our cases, both Deep Energy and

Sustainable Care experienced higher turbulence in their processes, frequently shifting the person responsible and the associated structure within a short period. This behavior was inconsistent with the historical stability of these companies' structures.

Sustainable Care initially redefined the role of the Information Technology (IT) department, assigning it the responsibility of driving DT. Despite achieving partial digitization of the salesforce, a significant change was deemed necessary. Consequently, the company created a Vice Presidency of Digital Transformation, selecting a director as the CTO to lead the new department. Facing challenges, the company reassigned the IT to a new CIO, working alongside the CTO, but eventually reverted to a previous structure. Despite acquiring startups, the company struggled to achieve substantial results, which is evident in frequent leadership changes and departmental restructuring.

Similarly, Deep Energy established an Executive Directorship for DT in 2019, intending to integrate DT and R&D under the same C-Level leadership. However, conflicts arose concerning the role of the company's traditional R&D, leading to frequent removal and reallocation of the department within three years. The maximum time a director stayed responsible for the directorship was 2 years. The frequency of change intensified in 2021, the year in which the company changed leadership two times in the same year until dissolving the directorship of DT and returning the R&D department to the Directorship of Technology and Production Development. Despite efforts, the company struggled to cope with the duality of securing current BM financial health and creating new digital offerings. Consequently, the objectives of DT moved from more ambitious in 2019 to incremental and limited to using digital technologies in new products. As such, Deep Energy has frequently abandoned ambitious initiatives throughout the years.

Building Materials predominantly deployed DT to the IT department and a startup engagement program to solve operational problems. Despite incremental goals, the company faced challenges in implementing startup solutions, discontinuing and reopening the program several times. Indeed, the company's digital solutions resulted in significant improvements in the channels, transforming analogical to digital platforms for reaching customers and implementing automation in the company's existing factories. The company has focused on using startups to accelerate the development of solutions for both of these goals. Apart from the improvement actions, Building Materials has frequently changed the more profound actions involving transformations to the existing business model, which remained promises in the first years and dissipated over the years, giving space to an emphasis on digital outcomes.

Contrastingly, B2B Solutions and Health Services maintained stability in their structures and responsibilities over time, implementing evolutionary changes. Health Services emerged as the most successful in the "going digital" dimension. Aligned with the strategy of becoming the leading healthcare platform in the precision medicine paradigm, the company recognized the need to be patient and permeate digital knowledge across the company's division, which would require long-term and intense investments. It initiated its DT efforts by training a digital innovation leader and establishing an Executive Directorship for New Businesses to foster collaboration between R&D and IT. In this vein, the company ran experiments to connect and align IT personnel and traditional medics, which led to an organic growth of the

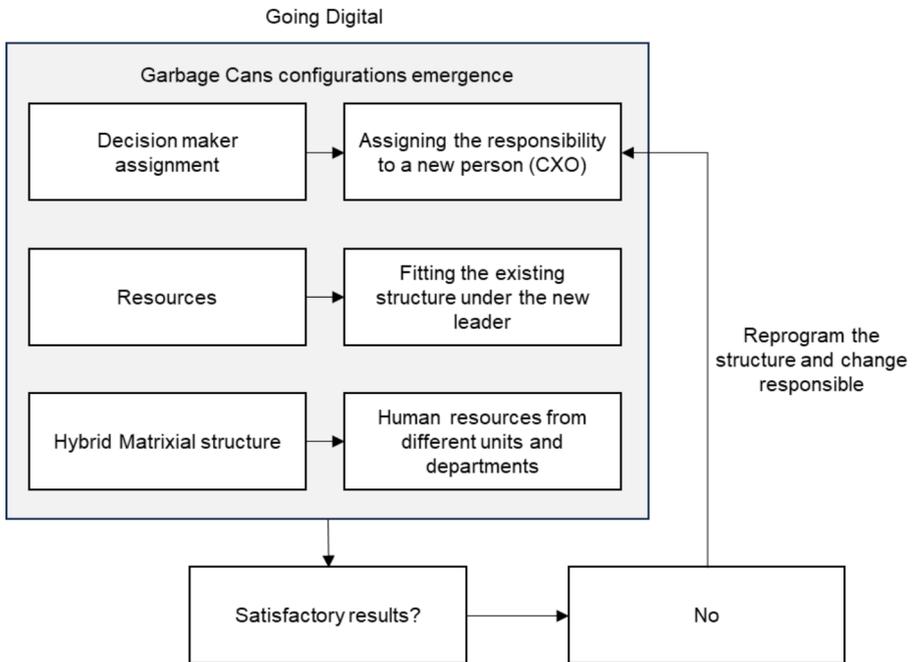
R&D department. This approach facilitated the company's transition from diagnostic medicine to becoming the leading healthcare ecosystem in Brazil.

B2B Solutions started its digital journey in 2009, investing in core digital technologies and creating a separate intrapreneurship unit. This unit, functioning as a separate company, focused on developing digital capabilities and exploring new business models. The company maintained a stable structure, with leadership changes occurring at the middle management level rather than at the top management teams. Similar to health services, B2B solutions recognize and accept the potential of losing performance in the short term to secure its focus on harnessing higher benefits in the long term. In particular, B2B solutions envisioned that the transformational approach to the current business model's DT would create several "white spaces" for the company to explore by developing novel digital business models. This hyperopic vision led the company to focus on developing and diffusing digital knowledge throughout the company, fostering the development of digital technologies, and rethinking the business process to a cross-divisional and more autonomous form of working. The result was the movement from envisioning to becoming a leading Internet of Things company to consolidating it.

The mix of case studies highlights the importance of structural stability in facilitating systemic DT and how "spinning the slots" results in promising actions but frequently abandoning and/or changing their scope. Deep Energy and Sustainable Care, lacking patience, often changed configurations in their digital efforts. Building Materials demonstrated a more focused leadership but faced challenges maintaining a structured approach. Underlying these cases was the presence of multiple attention magnets, focusing on the feasibility of current BM resulting in temporal myopia. Conversely, B2B Solutions and Health Services exhibited patience and resource dedication, rationalized challenges, and achieved superior results. Moreover, the companies recognized the need for high upfront investments and accepted the possibility of worsening the short term for the sake of the long term. Figure 2 captures the described mechanism of "spinning the slots."

### 4.3 Digital transformation actions

Examining how our studied cases attempted to design and implement their DT actions through the structure, we observe significant confusion. Many best practices and role models applied by our studied cases originated from startups and born-digital companies. In cases involving "spinning the slots," individuals were under considerable pressure: they needed to both secure management buy-in and deliver results at an unrealistically rapid pace. This scenario led Deep Energy, Sustainable Care, and Building Materials to, through a somewhat irrational trial-and-error approach, implement trendy buzzwords from digital companies, such as agile, Spotify squads, lean startup techniques to physical products, and startup engagement (e.g., Incubators, Corporate Venture Capital, Venture Building), without careful consideration of and strategic adaptation to their company's reality. In contrast, B2B Solutions and Health Services exhibited a clear difference. In both cases, solutions and decisions had a more precise roadmap for change, and even though they applied some buzzwords, they experimented and adapted them to the companies' reality.



**Fig. 2** The mechanism of “spinning the slots” of garbage cans for going digital

Sustainable Care started by applying the agile methodology to digitize the sales force. After the initial success, they attempted a significant leap by expanding these activities to the company’s core R&D. However, this generated friction between departments due to conflicting roles and problems with the nature of the company’s products (i.e., the development of personal care products based on plants). The incompatibilities were mainly attributed to time constraints and testing unfinished products, which are not applicable in this area due to regulation and stakeholders’ interest. This attempt, therefore, failed. The company acquired two startups working with digital services in the makeup area in an effort to showcase the potential of creating new digital BMs. The company also expanded its DT program to focus on startups to solve the company’s problems, accelerating change. However, according to an R&D member, this engagement did not extend to the rest of the organization, failing to diffuse the systemic DT.

Deep Energy also faced conflicts stemming from the combination of short-termism due to pressure to generate digital outcomes and the constant changes in the structure. This lack of continuity led the company to adopt and implement an agile project management system practice in its traditional R&D department to demand quicker and more frequent short-term outcomes. The company also attempted a startup engagement system, but the program faced a constant budget deficit and ended up financing startups that could solve the company’s short-term problems. Although this action led to digital outcomes, it lacked the integration mechanisms to reshape and rethink the company’s internal processes. A similar situation occurred in Building Materials. It created a startup engagement program with ambitious goals but was constrained to a

means of solving current BM problems. The company terminated the process due to high investment for low short-term returns.

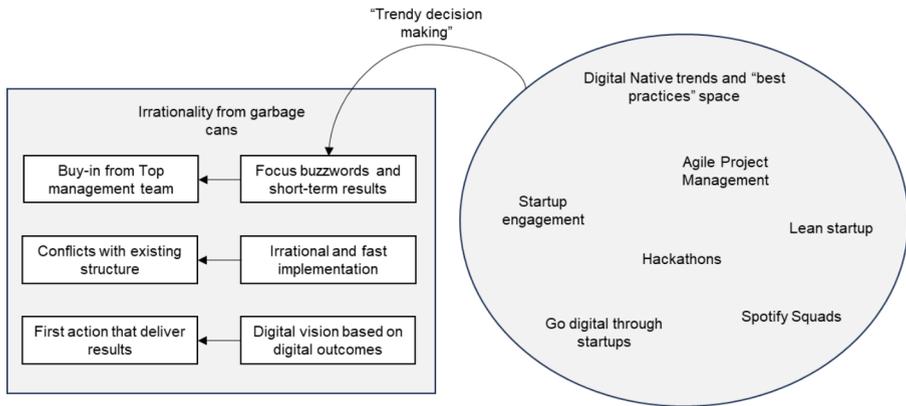
Health Services provided a counter-example. Before the company started investing in startups, it had already achieved initial results regarding new digital services in Genomics. The company overcame cultural and integration problems between medical and IT staff before experimenting with new ideas to explore digital business models. They decided to implement Spotify Squads in the most exploratory cases while keeping more standard R&D processes for regular products. The company engaged with startups to create new businesses, focusing on startups aligning with the vision of becoming a healthcare platform. In parallel, the company kept its efforts to go digital by thoroughly rethinking its internal processes before implementation.

A connecting point between B2B Solutions and Health Services is the larger vision to train employees, generate new talents, and gain buy-in from the members. Both companies made an MBA agreement with prestigious management schools to train in Lean Startup and Customer Development methodologies. These were the pillars of the company's new intrapreneurship unit, which focused on developing new digital business models. Historically focused on developing new products through traditional R&D, the company understood the need to create new business models to sustain its long-term vision. As such, they saw DT as a long-term endeavor rather than focusing attention on short-term results.

The cases we studied show contrasting activities and implementation decisions. Deep Energy and Sustainable Care generated significant digital outcomes and received awards but have not made substantial progress in going digital. We argue that the conflicts arising from their frequent changes in leadership and structure underlie the procedural inconsistency regarding the DT of their BM. Consequently, the underlying message resulted in irrational decision-making, involving the adoption of high-profile buzzwords that every other company was using, without adequate consideration for the company's reality. In contrast, Health Services and B2B Solutions developed a vision that included a digital dimension and maintained stability in their processes. Consequently, they did not allow short-term goals and digital outcomes to blur their actions. Figure 3 summarizes the "Trendy Decision Making" mechanism, signifying the irrational adoption of off-the-shelf solutions to generate quick returns.

## 5 Discussion

In this study, we investigated why legacy firms struggle with DT efforts, seeking to reveal the mechanisms behind the procedural inconsistency. Although it is recognized that legacy firms struggle with DT, the mechanisms behind this struggle remain a black box. Drawing on evidence from multiple case studies with leading Brazilian legacy firms, we contribute to the literature on DT in legacy firms in several ways by opening this black box and shedding light on the mechanisms of organizational attention and temporal myopia, "spinning the slots" for DT and "trendy decision making." In particular, we show how organizational attention, resulting from managers' interpretation and perception of the external environment, shapes how they define



**Fig. 3** “Trendy decision making” to go digital, focusing on delivering digital outcomes and fulfilling digital strategy to satisfy top management heuristics

their strategy cascades to influence the structure and actions for DT. We dive into the study’s specific theoretical contributions in the following sub-sections.

### 5.1 Theoretical implications and contributions

First, our research expands the DT literature by investigating the interplay between attention, situational context, strategy, and structure. Therefore, we provide evidence of the reasons behind the coupling between strategy and structure and an explanation of existing controversies in the literature regarding the effectiveness of special purpose structures for DT. As previous studies explore, legacy firms pursue multiple paths for DT. These often range from pure incremental strategy, focusing on reinforcing existing business models with digital (Trischler and Li-Ying 2023), to a more transformational strategy completely rethinking the existing business model (Abebe et al. 2024; Klos et al. 2023), and both simultaneously (Volberda et al. 2021). Literature and practice show that legacy firms change their structure, creating special purpose, top management teams’ structure to conduct changes. Although considered necessary, the evidence regarding the effectiveness of those changes remains inconsistent, ranging from positive to negative. For example, while some reveal the benefits of the Chief Digital Officers, which can drive and accelerate DT (e.g., Davison et al. 2023; Firk et al. 2021), others emphasize potential disconnections, conflicts, and low integration between these officers and the rest of the organization (e.g., Lorenz and Buchwald 2023).

In this regard, our study sheds light on attention mechanisms that might explain why this phenomenon occurs. In the studied cases, we observed different ways of interpreting the same country’s environment: (1) perceiving it as unfavorable, highlighting the threats, or (2) optimistic, recognizing the challenging nature but emphasizing the opportunities. Navigating this continuum seems connected to the relevance that managers assign to the presence of other attention magnets related to financial aspects (e.g., stakeholder pressures and crisis). Companies might devote organizational attention to improving economic aspects and satisfying the stakeholders in the

short term. Consequently, it unfolds in a DT strategy centered on safeguarding the existent BM through efficiency gains. The scarce nature of attention may hinder the firm's capability to prevent threats and secure short-term results while conducting holistic DT in the organization. Consequently, these legacy firms might develop temporal myopia, in which attention and decisions favor the short term. The allocation of attention to DT can easily be directed to digital outcomes, as they do not threaten the company's existing identity (Kammerlander et al. 2018) and align with the overall goal of saving the company and safeguarding stakeholders' interests.

Furthermore, we uncovered that the managers might also perceive this situation, recognizing their limitations regarding digital literacy and attention to conducting DT. Structural changes might emerge as a response to this acknowledgment to ensure that attention can also be directed to DT while seeking to bring people with knowledge and experience to the digital world. In line with the literature, we observed that the new CDOs are tech-savvy and have experience in startups and digital natives. The result is an attention distribution structure to signal and distribute the strategic intent throughout the organization. However, temporal myopia gives rise to emerging incompatibilities between the central focus of attention stemming from the top management team and the ambition of the attention distribution structures, which may create dysfunctions and confusion.

Indeed, we found that temporal myopic cases had the persistent presence of ambitious and transformational DT initiatives as promises at the beginning, which were frequently abandoned and moved into converging to focusing on digital outcomes that promote little change, are of low risk, and bring fast returns. As managerial attention influences the behavior of employees, such conflicts cascade down to the organization because of incompatible and confounding actions. As employees' and middle managers' attention is also limited, they might tend to converge with the legacy managerial structure more than the new attention distribution structure. Therefore, this misalignment may act against change, shifting the focus towards securing digital outcomes while undermining holistic, long-term actions. In contrast, we found that cases that focused on the opportunities had long-term DT perspectives focusing on digitally transforming the organization. This orientation led to a synergy between the top management team's attention focus and the structural attention from the DT structures. In this case, the heuristic for evaluating the quality and success of the efforts is in line, which leads companies to accept the need for high investments that might even worsen the short-term performance for the sake of pioneering the long term, thus displaying what we called "temporal hyperopia."

Second, our study contributes to the DT literature and the underlying strategic decision-making by evidencing the mechanisms behind Legacy firms' procedural inconsistency. Overall, there is an optimistic view regarding the effects of digital technology on strategic decision-making despite recognizing potential challenges in harnessing such benefits (Pietronudo et al. 2022). The literature emphasizes that increased information size and availability can help reduce uncertainty and increase the rationality of leaders to make data-driven decisions (e.g., Mariani and Nambisan 2021; Nambisan et al. 2017; Szukits and Móricz 2024). Therefore, it aids in reducing uncertainty risks and information asymmetry, ultimately reducing decision-makers bounded rationality (Chen et al. 2023). We contribute to the DT literature by revealing

that the growing size and availability of information might lead to a decision-making process based on chance rather than on rationality by revealing the mechanisms of “spinning the slots” for DT and the “trendy decision-making.”

We propose that an explanation might be that the frequent changes in attention distribution structure, through the DT-specific departments and leadership positions, develop silos of the so-called “garbage can” model (Cohen et al. 1972). The model was proposed to describe the chaotic reality of decision-making in organizations operating under ambiguous and uncertain conditions (Das and Teng 2002; Eisenhardt and Zbaracki 1992). According to the model, decision-making stems from an unpredictable process that involves four independent streams: problems, solutions, participants, and choice opportunities (Eisenhardt and Zbaracki 1992; Glynn et al. 2019). These streams flow into and out of a garbage can, representing a decision situation, such as a meeting or a project. The outcomes of the decision-making process depend on the mix of garbage can configuration and the availability of time and energy, which reflects the degree of coupling or alignment between the problems, solutions, and participants in a choice opportunity space (Das and Teng 2002).

As such, the garbage can model has been primarily applied to political systems rather than organizations, as those are deemed more random in their processes (Huber 1981; Zhu and Kindarto 2016). However, recent literature proposes an updated vision of the garbage can model, which can be a powerful lens to understand stochastic behavior based on probabilistic chance and help explain organizational failures (Glynn et al. 2019). To the best of our knowledge, there are only a few studies that examine how organizational attention during disruptive situations can lead to the creation of such silos that lead to the development of garbage cans with stochastic behavior by chance. As reflected in our findings, this situation might explain why well-managed and sound strategic decision-making organizations display more chaotic behavior.

An explanation for the phenomenon might lie in the type of information coupled with bounded rationality and organizational attention. In disruptive situations, such as the DT, the available information often has low determinacy, which means that it is not clear how to use available information to derive solutions to a problem, regardless of its availability. This condition falls precisely under the definition of ambiguity, which refers to a type of uncertainty related to decision-making and judgment in which the probability that something will have a predicted outcome is unknown (Frisch and Baron 1988). In this case, it is challenging for decision-makers to distinguish between effective and ineffective strategies (Nauhaus et al. 2021). Thereby, it may result in confusion and complexity surrounding the focus of attention. Available information regarding DT in legacy firms is ambiguous because most practices and knowledge come from digital natives. The resulting strategies might be ineffective, although based on extant experience and information. The bounded rationality, coupled with intense experience and knowledge of the brick-and-mortar version of the business, might influence decision-makers’ interpretation and encoding of the situational context.

As previously explored, we uncovered potential misalignments between the top management attention and the structural attention distribution. Temporal myopic managers tend to have low patience and expect quicker and more profitable results.

The consequence is a frequent change in the attention distribution structure, “spinning the slots” for DT. In practice, this means changing the garbage can participants (e.g., the CDO and the role of organizational divisions), which enter a modified choice opportunity scenario because of previous signals transmitted by removing the previous CDO. Therefore, resetting the problem space and the possible solutions leads to a “trendy decision-making” that tries to satisfy the heuristics and achieve buy-in from the employees and managers. The outcomes are a growing exposure of the achievements regarding digital outcomes to signal to the attention magnets that the company can navigate through the DT. Consequently, this situation reduces ambition at “going digital,” steering towards low-risk benefits actions that transform analogical processes into digital ones (i.e., to digitization rather than DT).

Because of such procedural inconsistency, DT in legacy firms may become less an outcome of well-structured strategic action and more of a chance; the solution space depends on the configurations of participants, problems, and opportunities resulting from spinning the slots. This contribution is particularly relevant and aligns with previous research that suggests the garbage can model as a valuable lens to gain insights into understanding organizational behavior under ambiguity and uncertainty (Ganz 2024), such as DT in legacy firms.

## 5.2 Practical implications

Our results offer several practical implications for managers and organizations making efforts towards DT, especially considering the context of this study focused on legacy firms. These implications address different challenges, such as leadership, strategy formulation, and organizational alignment. These challenges refer much more to the context of a marathon than a quick, short-distance race.

DT requires a delicate balance between striving for short-term victories and pursuing long-term goals. While immediate digital results can provide a valuable boost, organizations should not lose sight of their overall DT goals. Our work suggests that companies should not lose sight of a long-term perspective. This path can mean a high investment and possible performance problems in the short term, but it can also lead to the reward of successful innovation in the long term. In a marathon, as in DT, staying focused on the long-term goal is essential, resisting the temptation to spend all your energy on initial sprints that, although they can bring immediate gains, can compromise performance throughout the race. Similarly, short-term digital wins are essential and can give a valuable boost, but organizations should not deviate from their core goals.

In this long-term journey, legacy firms should carefully select technologies and methodologies to be implemented. Our results suggest that relying only on the popularity criterion for adopting digital transformation solutions can lead to a buzzword trap. Instead, these solutions should be thoughtfully tailored to align with the specific needs and realities of the business. This consistency is not only limited to technological choices but also to leadership stability. Just as a runner who constantly changes coaches may struggle to maintain a consistent training plan and achieve peak performance, an organization that frequently changes its leadership, especially in positions such as Director of Digitalization, can undermine its DT initiatives. Each new

coach may bring a different approach, which can confuse the runner and hinder their progress. Similarly, constant leadership changes can result in strategic inconsistency, hindering DT's continued advancement.

In addition, our results also highlight the importance of developing internal digital capabilities to sustain DT efforts. Organizations must invest significantly in employee training programs, especially digital skills and innovation methodologies. Just as a marathon runner needs a cross-functional team to prepare appropriately, including nutritionists, physiologists, fitness coaches, and other specialists, an organization needs a diverse set of internal skills and knowledge to navigate the journey of DT. The success of the marathon depends not only on the individual effort of the runner but on the effective collaboration of the entire support team. Similarly, successful DT requires different departments within the organization to work together in an integrated manner, sharing knowledge and avoiding silos. When all "functions" of the organization collaborate as a well-coordinated cross-functional team, DT becomes more fluid and effective, allowing the company to achieve its long-term goals.

And if it is essential to be internally aligned, it is not different regarding external resources. Startups can accelerate digital innovation, but our findings suggest that these engagements should also be strategically aligned with the company's overall DT goals. Just as supplements can boost the marathoner's energy, their use without proper planning can lead to imbalances and even impair performance in the long run. Similarly, using startups as quick fixes to immediate problems without a well-defined strategy can result in fragmented efforts that are disconnected from the company's larger goals. Organizations must strategically align startup partnerships with their long-term digital vision. These well-aligned collaborations can provide immediate benefits and sustainable contributions to DT.

Finally, we highlight the importance of aligning attention at all organizational levels to avoid the dangers of temporal myopia. Just as a marathon runner needs to stay focused on the finish line without losing sight of the different stages of the race, top management must take care of its attention signals regarding short and long-term digital vision to ensure that everyone, from middle managers to employees, is aligned with this larger goal. If the marathoner focuses only on saving energy for the next mile, he may lose sight of the pace needed to complete the race successfully. Similarly, organizations can lose sight of the broader goal of transforming business models by focusing excessively on short-term outcomes such as cost savings and efficiency gains. Just like in a marathon, where it is necessary to balance the effort at each stage of the race with the vision of the complete course, the success of DT seems to require balanced attention to both short-term and long-term objectives.

### 5.3 Limitations and future research

Our study also has several limitations that open avenues for future research. First, our study focuses on Brazilian companies. Despite this issue, we argue that leading companies in Brazil display maturity and behavior similar to those of global companies (McKinsey 2019). The challenges and strategies observed in Brazilian companies might resonate with those faced by firms globally, particularly in regions undergoing rapid digitalization. For example, only 30% of the 1,200 companies in the S&P

Global Index are considered “digitalized” incumbents, highlighting the widespread struggle with digital transformation (BCG 2022). This evidence provides a solid context for studying DT based on case studies. However, our findings are limited by the specific educational and economic context of Brazil, which may affect their applicability to other regions. Previous research has shown that DT in legacy firms depends on several aspects, such as culture, knowledge, and talent disposal (e.g., Hanelt et al. 2021; Verhoef et al. 2021; Volberda et al. 2021). Therefore, further research to understand the strategic actions and attention of leaders of organizations in other contexts might further extend our understanding regarding why legacy firms struggle with DT.

Another limitation is that we followed a multi-sectorial sampling strategy. Companies in different sectors display different strategies and degrees of DT. Besides, we have focused on large companies, neglecting small and medium enterprises, which is relevant as size is found to influence the challenges and available strategies and the DT. Comparing our findings and the mechanisms we describe with companies that might be in a superior position to conduct DT yet failed to do so might be an exciting source of insights to understand this phenomenon further. Thus, focusing on unexpected cases in specific industries and varying sizes can be a promising avenue for further research.

Further limitations stem from our multiple case study research design. While our multiple data sources and longitudinal approach provide rich theoretical insights and enhance contextual understanding, this comes at the cost of reduced generalizability. We highlight that our study is exploratory, in which we endeavor to build theory from cases. This research strategy represents the first stages for understating a phenomenon, to which we highlight that further qualitative and quantitative research is needed to test, confirm, expand, and offer other possible explanations for the reasons why legacy firms suffer with DT and, more broadly, to transformational changes that involve business model changes. In this connection, we highlight that our cases might not be entirely representative, as they are in contrasting positions, targeting either incremental solutions or more transformational approaches. The literature highlights the ambidextrous strategy. Further mechanisms and temporal approaches to managing attention in these cases might expand our research, gathering further insights into how organizational attention, temporal focus, and distributional attention might add to the knowledge of legacy firms' DT and, more broadly, to legacy firms' response to disruptive changes.

Finally, although our research found that the development of garbage cans and trendy decision-making are mechanisms behind procedural inconsistency, as we base our research on archival data, we have not thoroughly examined the underlying decision-making processes of these mechanisms. Literature has shown that incumbents have a high tendency toward incrementalism, a consequence of strategic decision-making based on experience and intuition (e.g., Lashitew 2023; Zhu and Li 2023). We have found possible hints about decision-making between the one based on intuition and the one based on a rational process. Depending on the situational context, the decisions might be made based on social acceptance, trying to adapt the intuition and the information available into something that can be accepted. Although we have uncovered an opposing side of such decision-making, it might also be functional, as literature has shown that employee acceptance is relevant in dealing with para-

doxes in the case of DT (Klein et al. 2024). We, therefore, believe that more research is needed to understand when and how management by chance and the creation of garbage cans lead to procedural inconsistency and when they might help overcome dependent behavior and inertia (Ganz 2024).

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