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THE EVOLUTION OF DIGITAL TRANSFORMATION IN SMES: EVIDENCE FROM AN ITALIAN CASE STUDY

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Abstract

Purpose. *This study aims to investigate the digital transformation (DT) of internationalizing SMEs from an evolutionary perspective, highlighting the factors that facilitate or impede this journey.*
Design/methodology/approach. *This study adopts a longitudinal single-case study methodology. Primary data were collected through semi-structured interviews with top management of an Italian internationalizing SME. To ensure comprehensive analysis, primary data was augmented by secondary sources, employing triangulation techniques. Subsequently, content analysis was carried out using Nvivo 14 software.*
Findings. *The study identifies the enabling and hindering factors of DT. The findings highlight the enabling role of digital dynamic capabilities to succeed in different DT stages. Adopting data-driven decision-making models is crucial to reduce environmental complexity and derive actionable insights to support business strategy. In addition, the findings reveal the evolution from an efficiency-centered to a differentiation-centered approach to achieve a more structured international positioning. Organizational inertia and cybersecurity risks represent the main hindering factors an SME must cope with in the initial and mature stages of DT. Ensuring effective knowledge management mechanisms is a prominent challenge throughout the DT journey.*
Practical and social implications*. The study is rich in theoretical and managerial implications. Theoretically, the study contributes to the evolutionary theory of DT of SMEs. From the managerial standpoint, this research offers valuable recommendations for managers to take advantage of positive factors and limit the ongoing downsides of the DT process.*
Originality of the study. *This study's originality lies in adopting an evolutionary perspective to observe the DT of SMEs. The relevance and significance of this case study are further enriched by the dense and SME-concentrated Italian landscape.*

1. Introduction

Digital transformation (DT) has required organizations to rethink how they operate, particularly in terms of organizational structure, business processes, strategy, and business models (Tan et al., 2015; Urbinati et al., 2020; Vial, 2019; Volberda et al., 2021). Adopting new technologies involves identifying new ways of doing business and creating value (Matarazzo et al., 2021; Verhoef et al., 2021).

Despite the existing body of literature mainly focusing on the integration of digital technologies within large corporations (Ghosh et al., 2022; Warner & Wäger, 2019), extant literature has recognized the peculiar characteristics of DT in SMEs, prompting interest in studying the factors influencing the various stages of their DT journey (Matarazzo et al., 2021; Soluk & Kammerlander, 2021).

SMEs contribute significantly to the economy worldwide, generating added value and employment. Specifically, in 2021, SMEs accounted for 99.8 percent of European enterprises and 65 percent of global employment (European Commission, 2022). Despite their significant economic contribution at the national and global levels, SMEs are particularly vulnerable to the challenges of the digital age (OECD, 2017; Pencarelli, 2022). Limited resources and expertise, coupled with potential limitations in staff capacity and technological adoption, can impede SMEs' DT efforts and undermine firm performance (Feliciano-Cestero et al., 2023; Sanguineti & Zucchella, 2022). Additionally, SMEs face concerns such as cybersecurity risks and data breaches (Vial, 2019). At the same time, characteristics such as flexibility and agility can facilitate easier technological adoption compared to the more structured processes in larger organizations (Troise et al., 2022; Vial, 2019).

Thus, DT presents SMEs with both opportunities and threats. While it can enhance their ability to compete internationally, adapt to changing market conditions, and ensure privacy and information security, it also exposes them to increased competitive pressure and requires robust cybersecurity measures (Buer et al., 2020; Feliciano-Cestero et al., 2023; Mitrovic et al., 2023; Straková et al., 2022; Zahoor et al., 2022).

DT is a multi-stage evolutionary process influenced, among other factors, by firm-level characteristics, the development of dynamic capabilities, and knowledge management (Garzoni et al., 2020; Matarazzo et al., 2021; Urbinati et al., 2020; Vial, 2019; Volberda et al., 2021; Zahoor et al., 2022). Studies examining the DT of SMEs from an evolutionary perspective are still rare in the literature (Marino-Romero et al., 2024). Embracing such an approach allows for a deeper understanding of the multifaceted dynamics during DT, shedding light on the main factors that enable or hinder SMEs' progress toward DT maturity.

Considering the complexity of DT and its various facets, this study aims to explore the key factors that enable or hinder the DT of SMEs throughout their evolutionary trajectory. Therefore, our study aims to answer the following research question:

What are the key factors influencing the DT of internationalizing SMEs at different stages of evolution?

This contribution is particularly valuable considering the critical role of SMEs' DT in maintaining their competitiveness in rapidly evolving and dynamic environments, where leveraging DT offers substantial growth opportunities (Matarazzo et al., 2021). To accomplish this research aim, the study examines the case of an Italian internationalizing SME in the sportswear sector from a longitudinal perspective, providing a detailed understanding of the transformational phenomenon. The Italian context is especially relevant due to the historic and prevalent nature of such organizations. Data from semi-structured interviews, supplemented by secondary data, were analyzed through a content analysis performed with Nvivo 14 software to identify potential links within the textual data.

In conclusion, the study aims to contribute to the theory on the evolution of SMEs' DT by offering managerial and policy recommendations to support and incentivize SMEs' digital transition.

The study continues with the literature review in Section 2 and the methodology in Section 3. Section 4 presents the main results, while Section 5 discusses the implications. The paper ends with conclusions, limitations, and future research areas in Section 6.

2. Literature review

DT evolves from the phases of digitization and digitalization within organizations (Verhoef et al., 2021). Progressing through these phases and approaching DT requires organizations to rethink their business strategy and undergo deep transformation (Correani et al., 2020; Garzella et al., 2020; Müller et al., 2021). DT is a complex challenge that demands new resources, advanced information processing capabilities (Li et al., 2022), and integration into digital networks (Verhoef et al., 2021). These factors, however, do not ensure DT success, as there is no single solution for DT (Kane et al., 2019).

Some authors, such as Kane et al. (2019), have studied DT from a process perspective, considering digital maturity and accumulated organizational knowledge. Organizations strive to increase their digital maturity over time by integrating new technologies into their business model and strategies (Jones et al., 2021; Nguyen et al., 2015; Wang, 2008).

The evolutionary path of DT in SMEs commonly begins with a greater

market and consumer orientation, leading to significant changes in business processes and models (Marino-Romero et al., 2024). The success of SME DT depends on several enabling and hindering factors, which influence the ability to retain a competitive advantage (Ramdani et al., 2022). When managed effectively, DT can enhance business performance in terms of profitability, growth, market value, social and environmental performance, consumer satisfaction, and agility (Kitchens et al., 2018; Matarazzo et al., 2021; Rialti et al., 2019).

Based on these premises, SMEs encounter enabling and hindering factors during the DT journey. The following sub-sections will be devoted to illustrating such key factors.

2.2 Enabling factors

The size characteristics of SMEs, which make them particularly flexible and agile, can facilitate DT by allowing easier adaptation to market dynamics and technological changes compared to larger organizations (Chan et al., 2019; Fletcher & Griffiths, 2020; Levy et al., 2001; Neirotti et al., 2017).

Digital skills are critical for accelerating DT by successfully incorporating technological innovations (Demeter et al., 2020; Zahra & George, 2002). Skills in big data analytics, for instance, enable organizations to perform detailed data analyses, providing insights into consumer preferences and market trends, improving forecasts, and reducing decision-making uncertainty (Kraus et al., 2019; Ferraris et al., 2019; McAfee et al., 2012; Park & Mithas, 2020). This availability of data enhances decision-making (Grover et al., 2018), combining business knowledge with data insights to make decisions more informed and complete (Lin & Kunnathur, 2019; Manika et al., 2017).

The availability of data comes from digital platforms. The use of digital platforms strengthens SMEs' connections with consumers, reducing costs, achieving greater contact with the public, and facilitating internationalization (Li et al., 2018; Hånell et al., 2019; Taiminen & Karjaluoto, 2015). Digital platforms, such as Alibaba, Amazon, and eBay, have revolutionized the distribution of value and innovated the relationship with consumers (Perren & Kozinets, 2018; Ramaswamy & Ozcan, 2018). Information technology (IT) solutions enable progress toward SMEs' internationalization by improving communication quality and speed and enhancing SMEs' digital presence at reduced costs (Feliciano-Cestero et al., 2023).

Dynamic capabilities, which promote opportunity identification and business process reconfiguration, are essential for maximizing DT benefits (Soluk & Kammerlander, 2021; Teece, 2007). Developing dynamic capabilities within SMEs contributes to their growth and improved performance (He & Wong, 2004; Lubatkin et al., 2006; Sunday & Vera, 2018). Dynamic

capabilities also enable the perception of the dynamics and changes arising from the external environment (Teece, 2007). To take full advantage of such emerging opportunities, entrepreneurs and managers must make themselves the drivers of change (Anwar, 2018; Cenamor et al., 2019). A corporate culture conducive to innovation and organizational change supports DT, especially in SMEs where the entrepreneur plays a leadership role (Franco et al., 2014; Garzoni et al., 2020; Matarazzo et al., 2021; Mintzberg & Waters, 1985). These managerial and entrepreneurial capabilities can drive DT, stimulating adaptation, agility to meet new challenges, and the ability to seize market changes and proactively respond to new demands (Lobo & Whyte, 2017; Vanhaverbeke, 2017; Vial, 2019).

2.3 Hindering factors

The rapid increase in data volume and complexity requires organizations to possess adequate analytical skills to manage data effectively (Asadullah et al., 2023; Veglio et al., 2020; Wamba et al., 2017). A lack of these skills can lead to poor decision-making and significant financial losses (Manika et al., 2017). SMEs must, therefore, be able to attract people with these analytical skills to compete in the market (Erevelles et al., 2016). The lack of skilled employees is a factor that further amplifies the digital divide between SMEs and large companies (Nguyen, 2009; van Laar et al., 2017). Therefore, a barrier to the adoption of DT for SMEs stems from a lack of adequate digital capabilities (Warner & Wäger, 2019).

Limited financial resources and digital skills make SMEs often resistant to change (Spithoven et al., 2013), complicating the transformation and reconfiguration needed for technology adoption (Coleman et al., 2016). Indeed, many SMEs struggle to recognize DT's value and relevance, remaining anchored to established routines (Coco et al., 2024; Coleman et al., 2016). The inertia of SMEs usually stems from the familiarity of the organization, which makes them more attached to habits accrued over time. Therefore, organizations need to engage in the creation of strategic partnerships to collaborate with experienced data management stakeholders that can facilitate DT or the activation of a learning process suitable for successfully managing DT, leading to greater digital literacy (Coco et al., 2024).

A strong management commitment is essential for aligning people, technologies, and organizational resources to transform into a data-driven organization (Sivarajah et al., 2017). This process must be gradual to primarily enable the organization to understand the true potential of data and successfully incorporate it into business routines and processes (Janssen et al., 2017). A step-by-step approach helps avoid organizational resistance and promotes coordination (Demeter et al., 2020). Flexible leadership and e-leadership are crucial for aligning business strategy with digital technol-

ogy to foster SME growth (Fachrunnisa et al., 2020; Garbellano & Da Veiga, 2019; Li et al., 2018; Soluk & Kammerlander, 2021).

3. Methodology

3.1 Qualitative and longitudinal methodology

The empirical data for this study were collected by applying the qualitative case study (Cunningham, 1997; Eisenhardt, 1989; Eisenhardt & Graebner, 2007; Yin, 1994). The qualitative research design includes multiple case studies and in-depth single-case or ethnographic studies.

Qualitative research helps to explore the identification of critical factors and other key variables that explain a phenomenon. Moreover, the SMEs' willingness to disclose strategic and organizational information in official documents is limited (especially if they are not listed), so direct contact is essential to understanding these profiles. The use of a single case study is aimed at describing in depth the phenomenon analyzed for a specific case (Baxter & Jack, 2015; Easterby-Smith et al., 2002; Eisenhardt & Graebner, 2007). Using a single case study approach, we faced a certain trade-off between the depth of analysis of the selected case and the potential generalization of the results. However, we addressed this issue by adopting a rigorous and high-quality research design based on the suggestions of Gerring (2004), Gibbert et al. (2008), and Ketokivi & Choi (2014).

The longitudinal case study methodology (Khanagha et al., 2014; Schmitt et al., 2018; Volberda et al., 2021) applied to a single case study is useful in order to understand the evolution of the strategic behaviors and, with a specific focus, adoption, implementation, and evolution of DT. According to Khanagha et al. (2014), this approach helps to understand the sequence of events that shape each decision path, and it is used by several scholars (Volberda et al., 2021) for the effectiveness in observing the development of the implementation of DT.

In general terms, according to Khanagha et al. (2014), a longitudinal case study approach is useful to provide the different stages of business model innovation, identifying the sequence of external and internal factors that are affecting the strategic decision (Hutzschenreuter & Kleindienst, 2006). The study by Plotnikova et al. (2021), focused on Ericsson, illustrates an in-depth analysis of the open strategizing processes applied to create and coordinate an online community. The same approach was applied by Aversa et al. (2021) to Amazon's various business models. The application of the longitudinal single case study is still limited (Barbieri et al., 2023; Isensee et al., 2023; Saratchandra, 2022).

3.2. Case study selection

Specific characteristics of the selected SME allowed us to gather rich data and explore the DT adoption of this firm. Several reasons justify the selection of this case study. The investigated SME is a first-generation family firm operating in Made in Italy fashion with a turnover of 37 million Euros and employing around 72 employees in 2022. Table 1 shows some of the company's balance sheet information from 2019 to 2022 that shows a significant recovery, after the COVID-19 pandemic, in terms of net profit (Aida, 2024).

Tab.1 Corporate data

Balance Sheet Data	2022	2021	2020	2019
Sales Revenue	37.543.760 Euros	35.901.888 Euros	35.481.475 Euros	40.132.773 Euros
EBIDTA	2.375.654 Euros	2.181.602 Euros	1.420.577 Euros	1.922.837 Euros
EBIDTA/Vendite (%)	6,19 %	5,94 %	3,83 %	4,54%
Net profit	559.905 Euros	550.640 Euros	179.873 Euros	391.193 Euros
Total assets return on equity (ROE)(%)	2,44 %	2,07 %	0,50 %	1,51 %
Total Assets	37.943.689 Euros	41.931.138 Euros	52.720.706 Euros	40.374.634 Euros
Debt/Equity Ratio	0,21	0,27	0,20	0,11
Bank debts on net profit %	12,18 %	19,36 %	19,07 %	6,47 %
Employees	72	78	100	50
Net Assets	22.970.122	26.663.565	35.806.103	25.978.675

Source: Authors' elaboration from Aida database.

The fashion industry and the Made in Italy domain have not been frequently used as the context of the study of this phenomenon because of the profiles of the industry in itself (traditional/low-tech industry) and of firms (SMEs). The rationale behind the selection of this specific case study is related to the fact that Freddy, despite being an entrepreneurial and family business operating in a traditional sector such as the sportswear sector, implemented a process of intense DT.

Freddy is a Made in Italy SME, operating in a specific segment of Fashion (e.g., textile/clothing, footwear, leather goods, eyewear, jewelry) focused on sportswear (dance, fitness, and leisure). In the general opinion,

"Made in Italy" is recognized as an umbrella brand, that offers a strategic image of quality differentiation at the international level (Matarazzo et al., 2021). Sportswear is mainly considered a global fashion industry, but Freddy, thanks to its focalization strategy on dance and wellness-fitness and local supply chain, was able to create an international brand with a Made in Italy anchorage. These profiles impacting the relationship with the market are powered by digital tools.

Moreover, Freddy is an SME. The SME domain is interesting for several reasons. It is well known that digital technologies, such as big data, artificial intelligence, and 4.0 machines are impacting, in particular, big companies' business models (Rothberg & Erickson, 2017; Volberda et al., 2017). For this reason, research focused on digital transformation in SMEs is still limited and the exploration of enabling factors and hindering factors is theoretically and practically relevant. The diffusion of platforms and social media, with the increasing relevance of mobile devices, have radically modified Freddy's business model, moving from an exclusive B2B perspective to an additional B2C one. The B2C perspective, enabled by digital technologies, helps the company to become an international player, reaching directly the final marketing.

The governance structure of SMEs, in terms of the leadership style of entrepreneurs and founders, identified in the family, tends to imprint the digital orientation. Freddy is a proper case of a small and entrepreneurial company, that is oriented to digital transformation (Li et al., 2018). The history of this case is paradigmatic in illustrating the role of DT in shaping strategic growth.

Founded in 1976 by Carlo Freddi, it has become known for the quality of its products, attention to design, and functionality, particularly in line with the needs of sports-loving consumers. The company has 76 employees and is based in Milan, Italy. The brand's philosophy supports people's fitness and wellness goals by promoting an active and healthy lifestyle (Freddy, 2023).

The company is best known for a particularly innovative clothing line, "WR.UP®," which introduced a unique design for leggings aimed at enhancing women's body shapes through specific patented technologies in 2013. This product line has also achieved great success internationally, contributing to the growth and expansion of SMEs (Freddy, 2023). This collection has also been extended over time with new versions, such as WR.UP® FITS BETTER, as well as expanding the product range, thus benefiting from the continuous studies and analyses regarding fabric technology to offer ever better fits to consumers (Freddy, 2024). Therefore, in recent years, other products have been designed and patented by Freddy.

Freddy conceived, designed, and manufactured the new 100% Made in Italy capsule collection, that was launched in 2017 (Penco et al., 2023). Fred-

dy has a strong presence in both the Italian and international markets, with single-brand stores and an extensive network of distributors that have enabled the brand to reach a wide audience in different parts of the world. In recent years, the extension has involved several new countries (Freddy, 2023).

With the onset of the COVID-19 pandemic, Freddy stepped up investment in its e-commerce, increasing online product sales by revamping the website and implementing new membership programs for the public (Freddy, 2024). In 2020/2021, Freddy was nationally awarded as the most performant operator in the fashion e-commerce category.

3.3 Data collection

Data collection included the conduct of semi-structured interviews, developed following a research protocol consisting of open-ended questions that gave respondents the freedom to answer about the topics of the study. The selected interviews were conducted in different periods, from December 2019 to April 2023, involving top figures in the company such as the director of e-commerce, finance, and management and control to outline the company's evolutionary trends. Other contacts, shared documents, and informal interviews have been inserted into the construction of the case study (Table 2).

Tab.2 Key informant profile

#	Data	Interview Date	Interviewee position
Freddy S.p.A.	- Semi-structured interviews; - Corporate Materials (corporate report, official website, and additional materials, etc.…).	December 2019	CFO and member of the Board of Directors
		December 2020	CFO and member of the Board of Directors Informal contact and Corporate Materials
		January 2021	CFO and member of the Board of Directors Informal contact
		November 2021	CFO and member of the Board of Directors E-commerce Director (informal contact, Corporate Materials, and award Corsera)
		April 2023	CFO; E-commerce Director Management Control Director.

Source: Authors' elaboration.

The research team created continuous contact with the selected firm, collecting corporate documents and involving the management in educational projects (seminars, workshops, presentations). The primary base of the research is constituted by interviews. They were conducted remotely, using the Microsoft Teams platform, and lasted an average of about one hour each. After obtaining the interviewees' consent, the interviews were recorded and transcribed by the researchers. Key informants' statements were triangulated with secondary data from shared company reports and materials available on the company's official Web site. Several pages of the company website as well as several sections of the company reports were explored to gather further information. The two company reports of reference were "Freddy - Fall-Winter 2019" and "Freddy - Company profile" of which, for the former, the sections related to "New B2C approach to the Collection", "Made in Italy grows", "New S.N.B.N WR.UP Projects" and "Freddy Revolutions" (Freddy, 2019) were explored, while for the latter the entire document composed of three main sections "Who we are", "What we do" and "How we communicate" were explored (Freddy, 2023).

The first report is analyzed, in section "2. New B2C approach to the Collection", which shows how the collections have been designed over time more and more for the consumer audience, also international, by defining both specific editorial plans and more satisfying and comfortable sales locations. In the section "3. Made in Italy grows", SME highlights how it has always tried to differentiate its offer from other competitors by emphasizing the typical characteristics of Made in Italy, such as the Italian taste in colors and fabrics. While in the sections on "New S.N.B.N WR.UP Projects" and "Freddy Revolutions", the company communicated its commitment to creating increasingly comfortable and technological collections for its public capable of bringing the sport into fashion and fashion into sport (Freddy, 2019).

The second report focuses on the history of the brand and in particular on "The brand and its evolution", highlighting some of the main milestones in the course of the company's evolution as well as the study from a technological point of view that led EMS to the implementation of patented technologies, not only about clothing but also about certain footwear (Freddy, 2023). The collection of secondary data allowed triangulation of information from multiple sources (Flick, 2022; Stake, 1995; Yin, 1994).

3.4 Data analysis

The interview transcripts and collected company materials were analyzed using a qualitative method, in particular, by conducting a content analysis using Nvivo 14 software. Content analysis is widely used in management studies as it represents a systematic and reproducible methodology to analyze textual data (Krippendorff, 2018).

The coding process led to the definition of two main themes, a semantic value and a time value, divided into codes and sub-codes. A coding process that enabled a better understanding of the phenomenon by breaking down codes into sub-codes (Gioia et al., 2013; Grbich, 2013). From the definition of these codes and sub-codes, it was possible to define a code tree and codebook composed of multiple levels (Grbich, 2013), as shown in Table 3. The codebook was then obtained by adopting a deductive approach to capture potential themes and codes from the analysis of relevant literature (Miles & Huberman, 1994).

Tab. 3 Codebook.

Themes	Codes	Sub-Codes	References
Semantic Value	Enabling factors in DT journey	Open culture for change	Garzoni et al., 2020
		SMEs dimensions	Chan et al., 2019; Fletcher & Griffiths, 2020; Levy et al., 2001
		Agility and flexibility	Chan et al., 2019; Fletcher & Griffiths, 2020; Levy et al., 2001
		Entrepreneurial intuition	Matarazzo et al., 2021; Mintzber & Waters, 1985
		Role of top management	Lobo & Whyte, 2017; Sivarajah et al., 2017; Soluk & Kammerlander, 2021
		Innovative digital product	Marino-Romero et al., 2024
		Dynamic capabilities	Soluk & Kammerlander, 2021; Teece, 2007
		Product standardization	Buer et al., 2020; Feliciano-Cestero et al., 2023
	Hindering factors in DT journey	Knowledge constrain	Wamba et al., 2017; Warner & Wäger, 2019
		Resistance to change	Spithoven et al., 2013
		Organizational inertia	Coleman et al., 2016
		Uncertainty of market trends	Ferraris et al., 2019; Park & Mithas, 2020
		Data privacy issues	Mitrovic et al., 2023
		Dependence on third-party platforms	Asadullah et al., 2023
	Effects of the DT	Penetration into international markets	Hånell et al., 2019; Straková et al., 2022
		Enhanced performance (e.g., sales, market share)	Kraus et al., 2019; Matarazzo et al., 2021; Perren & Kozinets, 2018; Ramaswamy & Ozcan, 2018; Ramdani et al., 2022; Rialti et al., 2019
		Increased efficacy (e.g., customer loyalty)	Li et al., 2018; Matarazzo et al., 2021
		Increased efficiency (e.g., process optimization)	Buer et al., 2021; Feliciano-Cestero et al., 2023; Taiminen & Karjaluoto, 2015
		Business model transformation	Marino-Romero et al., 2024; Neirotti et al. 2017
Time Value	Before	2019	
	Middle	2020-2021	
	After	2023	

Source: Authors' elaboration.

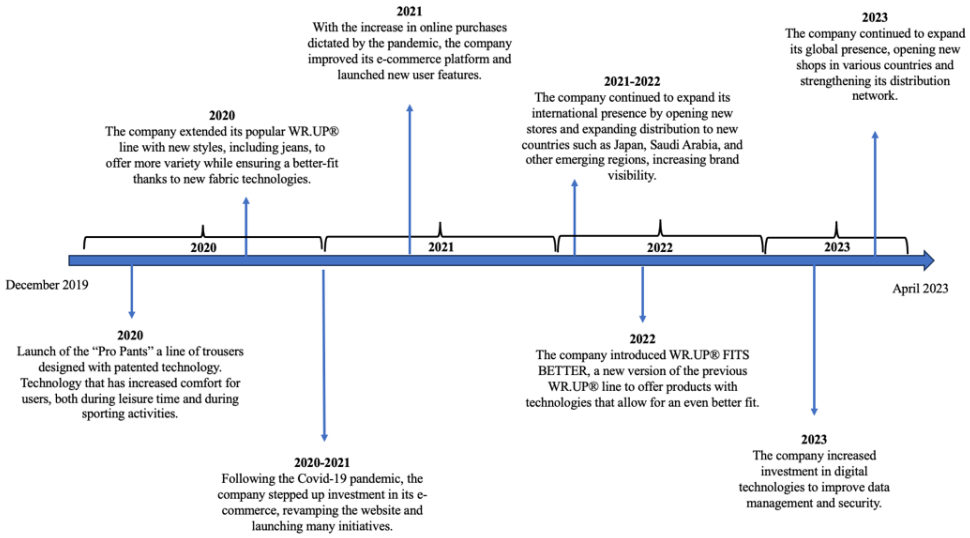
Specifically, the codebook shown in Table 3 describes at the time value the different moments of the analysis while at the semantic value, it presents 3 codes relating to the factors at play in the DT pathway (Enabling Factors and Hindering Factors) and the potential effects of DT. The time value reflects the desire to analyze the evolutionary perspective of DT, identifying for the different periods the efforts committed by the SME. The time value reflects the "temporal bracketing" analysis strategy described by Langley (1999, p. 703) and reiterated by Soluk & Kammerlander, 2021.

Therefore, each textual unit was coded with this codebook in mind, both for semantic and temporal value, as proposed in other studies in the literature (Beattie et al., 2004). The researchers coded the data collected independently, comparing only when they disagreed. Specifically, one or more semantic codes were assigned to the collected data, as well as a time code to track the evolutionary process of SMEs' DT. This analysis made it possible to explore the interactions between the different codes and discover connections and patterns among the collected data (Krippendorff, 2018).

4. Findings

Figure 1 shows the main events that occurred along the DT process, from 2019 to 2023, in the company's history such as technological innovations, new products, and penetration of new markets.

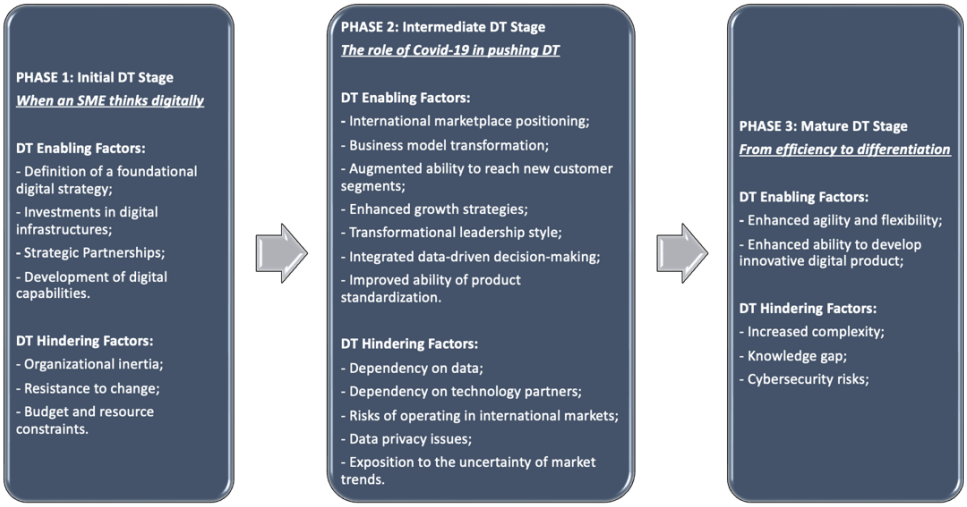
Fig. 1: Timeline of the main events in the company's history in the period December 2019-April 2023.



Source: Authors' elaboration

The content analysis of the secondary and the interview data revealed three major phases along Freddy's DT process. These phases can be split into (1) the initial stage of DT; (2) the intermediate stage of DT; and (3) the mature stage of DT, shown in Figure 2 to give an evolutionary representation. The analysis of enabler and hindering factors encountered in each phase helps to explore the "reason why" of the entire process. In the following sections, we describe each phase and, when possible, we use representative quotes to illustrate our interpretations.

Fig. 2: The SME digital transformation journey.



Source: Authors' elaboration.

4.1 Phase 1 - Initial DT stage: When an SME thinks digitally

Different hindering factors emerged in the initial stage of DT, such as a relatively limited adoption of advanced digital technologies, organizational inertia, and resistance to change due to established processes and routines. At this stage, the firm also faced challenges related to budget and resource constraints that hindered the strengthening of the digital infrastructure and the ability to invest in digital skills research. The lack of digital capabilities could hamper the firm's ability to manage the evolutionary challenges. To overcome this limitation, the firm undertook ad-hoc training to stimulate employees' digital literacy before investing in digital talent recruitment. It emerged how "There was a need to hire people with new profiles like the e-commerce manager that we didn't have before, so people dedicated to the digital part, also social, and start working with

agencies and with new suppliers related to the social and Internet world […]". Simultaneously, the firm established strategic partnerships to facilitate knowledge transfer and overcome capability gaps. Strategic partners provided access to specialized expertise and resources, accelerating the organization's DT efforts. Partners provided the firm with analytics capabilities, playing a relevant role in defining strategic goals, increasing sales, and defining scenarios for internationalization.

Realizing the DT's challenges, key decision-makers proactively crafted a more comprehensive digital strategy to identify areas for improvement, priorities for establishing investments in digital infrastructures, and a roadmap for future digital initiatives. Thus, DT's initial stage enhanced the firm's digital awareness and online presence by laying the foundation for a cultural shift to integrate digital tools into daily micro-practices. In this stage, the firm allocated much of the initial investment towards fortifying the e-commerce website. Such an investment would prove pivotal in the ensuing years as the e-commerce website evolved into a cornerstone touchpoint for nurturing customer relationships and driving sales growth, leading to increased market share.

4.2 Phase 2 - Intermediate DT stage: The role of COVID-19 in pushing DT

In the intermediate DT stage, the firm recognized the importance of positioning itself in the international marketplace to expand its global reach, enhance brand visibility, and capitalize on emerging market opportunities.

COVID-19 was a triggering event that shaped the firm' DT journey. It is important to recognize that the DT process was initiated before the pandemic, but this shock helped to create a significant booster. First of all, because of the crisis of physical commerce, the firm increased its e-commerce channel. Moreover, the firm invested in digitalization, accelerating the investment in digital marketing. This time was also devoted to new investments in logistics and CRM digital systems (back-end).

To accomplish such a purpose, the firm invested in developing digital capabilities to improve the ability to seize, sense, and transform the business model and increase operational efficiency and product standardization, ultimately resulting in cost reductions and process optimization. Investments in digital platform capabilities played a pivotal role in enhancing the firm's data collection capacity and strengthening connections with customers.

These enhanced capabilities enabled an improved ability for strategic renewal. Strategic renewal has been supported by the ongoing cultural shift towards embracing an innovation mindset. In addition, the adopted transformational leadership style fostered a culture of experimentation and adaptation, streamlining change management processes through continuous support to employees, collaborative approaches, informal communication, and learning-by-doing mechanisms.

By combining augmented digital marketing capabilities and renewed digital infrastructure, the firm reached new customer segments. In the effort to increase customer loyalty, the firm effectively deployed digital capabilities and technologies improved CRM activities, fostering higher customer engagement and satisfaction, and culminating with enhanced business-customer relationships. The firm also embraced an omnichannel approach, exemplified by smartwalls in-store, to integrate online and offline channels and deliver a seamless customer experience across multiple touchpoints.

Improved ability to collect customer data has gone in parallel with increased data dependency about decision-making and market insights: "[..] in a world dominated by data, where there are millions of data available, both commercial data and marketing data, you must make sure you know how to manage it properly." To enable effective data management, the firm adopted data management practices, establishing data quality, security, and accessibility benchmarks. This implied implementing data storage solutions, data backup procedures, and basic data security measures.

The firm has endeavored to transform data challenges into opportunities by developing an integrated decision-making framework that blends entrepreneurial intuition and managerial expertise with data-driven empirical evidence: "Over the years, there has been a shift from models increasingly based on intuition, concerning experience and the company's vision or the manager's discernment, to models increasingly assisted by scientific evidence to support strategic decisions". Data represent the key element "to do business in an increasingly competitive market, adapt to change, and take advantage of it". Leveraging data to make decisions adds a layer of complexity since it risks slowing down "the decision-making process […] due to the increased analysis of structured data. This analysis incorporates external factors in simulations that explore various scenarios". However, the informants recognize the potential value-added deriving from data-driven decision-making: "While this may introduce a slight delay in decision-making, it has the potential to result in more informed decisions".

At the same time, however, operating in international markets introduced new hindering factors, stemming from cultural barriers, geopolitical uncertainties, and evolving market trends. Additional risks include regulatory compliance and data privacy concerns. Another prominent hindering factor of the intermediate stage is the dependence on technology partners. Relying on technology partners exposes the firm to the risk of inhibiting effective alignment between technological activities and strategic and functional objectives across critical areas. However, by enhancing strategic alignment capabilities, the firm successfully mitigated this risk and optimized its utilization of technology to drive overall business success. Therefore, proactive risk management and strategic planning revealed essential factors for success in these critical areas during DT's mid-stage.

4.3 Phase 3 - Mature DT stage: From efficiency to differentiation

In the maturity stage, the firm faced an increasing complexity deriving from global crises, increased costs, and evolving market trends, exacerbating knowledge gaps within the organization. To overcome these hindering factors, the firm prioritized agility and flexibility to adapt to rapidly changing markets. Enhanced organizational agility enabled the firm's ability to anticipate and respond timely to unexpected external changes, resulting in a more resilient and competitive business system.

Investments in the development of product innovation capabilities started to pay out, as the firm showed an enhanced ability to create highly innovative products aimed at meeting customer demands. For example, the firm invested in developing a new pant with peculiar characteristics. The launch of innovative products differentiated the firm from competitors and met the evolving customer needs, contributing to enhanced market share. In particular, "There is always great work on the product in the sense that we are working on collections but also on patented products, for example, the Wrap product is a product that has a patent behind it […] this is the aspect of strategic direction". In addition, strong product innovation capabilities fortified brand positioning and reputation for quality in the marketplace.

Implementing predictive analytics represents an area for future development to anticipate market trends and customer behavior. The interviews confirm that "[...] making informed decisions based on data, not only historical but also predictive, is critical". In particular, the firm is trying to create «a business analytics system that links information sources from different functions that will allow us to have more complex analysis and to make forecasts on sales and orders for agents and distributors to maximize sales». Also, predictive analytics would enable a more sophisticated approach to the international market and the ability to effectively engage new consumer segments by knowing more about their preferences and questions.

As the firm relied more on digital technologies for scenario analysis, it faced heightened cybersecurity risks. Cybersecurity is a critical strategic area that needs to be improved in the future. As the expansion of the customer base has increased the value of data and the company's potential for differentiation, data theft can decrease competitiveness and growth prospects. In addition, the loss of sensitive data can undermine the bond of trust between the company and its customers, increasing the churn rate.

5. Discussion and implication

This study examines the DT journey of an Italian internationalizing SME through an evolutionary lens, emphasizing the significant factors encountered during this progression.

The results reveal how each DT stage presents opportunities and threats; in the initial stage, the tensions were internal to the firm, while in the intermediate and mature stages, the threats came from outside. In the initial DT stage, the firm focused on overcoming internal hindering factors, such as organizational inertia and resistance to change (Vial, 2019), and creating favorable conditions to enable DT. In the intermediate and mature stages, the focus was instead on the factors facilitating the DT, capturing, and capitalizing on opportunities deriving from DT.

According to previous research (Matarazzo et al., 2021; Soluk & Kammerlander, 2021; Warner & Wäger, 2019), the results confirm the significant role played by dynamic capabilities as enablers of DT. In particular, this research contributes to the theory by identifying and discussing digital dynamic capabilities especially relevant alongside various DT stages. Developing dynamic capabilities from the initial stages of DT is crucial to succeed in this evolutionary process. By developing digital dynamic capabilities, SMEs can successfully implement digital technologies, cultivate strategic value for innovation and growth, and better position in the international competitive scenario, rapidly responding to changes in the digital landscape (Marino-Romero et al., 2024). These findings align with existing literature, which suggests that firms require non-imitable and non-replicable capabilities to support their strategies (Schilke et al., 2018; Teece, 2007). Constant adaptation of growth strategies requires SMEs to cultivate business strategy alignment and dynamic managerial capabilities through a transformational leadership style (Akter et al., 2016; Helfat & Martin, 2015; Volberda et al., 2021). These are keys to aligning business objectives with digital initiatives and fostering a culture of innovation based on continuous learning and experimentation.

Following Janssen et al. (2017) and McAfee et al. (2012), our results emphasize the relevance of implementing integrated data-driven decision-making models. From the intermediate to mature DT stage, the firm leveraged data-driven insights complemented by entrepreneurial intuition to drive informed strategic decision-making. Integrated decision-making models enable SMEs to synthesize data from various sources, analyze it effectively, and derive actionable insights to support business strategy and business model innovation (Ciacci & Penco, 2023; Pedota, 2023; Persaud & Zare, 2023; Vial, 2019). E-commerce and other digital channels have reinforced the validity of data-driven decision-making (Matarazzo et al., 2021). The successful integration of data-driven decision-making models into a

decisional structure strongly based on the entrepreneurial role aligns with previous findings (McAfee et al., 2012), highlighting the use of big data does not compromise the need for human vision. On the contrary, the case study shows that human decision-makers are still key in identifying business opportunities and market changes. Through creative thinking and innovative ideas, they cover centrality in decision-making, using big data to validate their original insights. This finding is also consistent with previous literature highlighting the strategic role of data-driven decision-making as an augmenting factor of human capabilities in decisional processes (Grover et al., 2018).

This study sheds light on the effectiveness of a small, family-style decision-making group in driving the DT. This contribution provides an original perspective of governance in SMEs, suggesting that such a governance style can enhance reactiveness and effectiveness in DT and related strategic decisions, in contrast to more hierarchical governance models of larger organizations. A family-style, small decision-making group equips the firm with enhanced flexibility and speed in making strategic decisions, enabling it to stay agile in changing business environments (Škare & Soriano, 2021). Integrating predictive analytics stands as a prospect for future advancement. Therefore, the firm expects to evolve the current descriptive analytics model to implement predictive and prescriptive analytics, enabling the anticipation of market trends and customer behaviors (van Rijmenam et al., 2019).

The shift from efficiency-focused strategies to differentiation and market development as DT matures contributes to strategic management literature by providing empirical evidence of how strategic priorities evolve in response to DT. In the initial to mid-stages of DT, the firm prioritized efficiency approaches to optimize operations and save costs. However, as DT progressed toward maturity, the approach shifted towards differentiation and market development to better sustain growth and profitability (Verhoef et al., 2021). Similarly, as the firm progressed towards the DT mature stage, agility and flexibility became increasingly crucial to pivot quickly in response to changing market dynamics and customer demands, setting the stage for enhanced competitiveness (Teece et al., 2016; Troise et al., 2022).

Looking ahead, the firm must address several challenges to sustain its DT efforts. For example, transforming dependence on technology partners into a digital ecosystem that promotes greater integration of digital systems is essential for long-term success (Stonig et al., 2022). The firm must also prioritize cybersecurity risk management to safeguard digital assets and maintain customer trust (Vial, 2019).

5.1. Theoretical and managerial implications

The study contributes to the advancement of the academic debate on the evolutionary DT of internationalizing SMEs (Marino-Romero et al., 2024). This paper improves the theoretical understanding of how DT is not a monolithic process but evolves through evolutionary stages, each of them influenced by specific internal and external factors. This perspective can contribute to the literature on organizational and strategic change by emphasizing stage-specific dynamics. In particular, the study shows that when an SME reaches a certain digital development, in that it offers its product digitally and has already implemented changes inherent in business processes, the focus shifts to the ability to manage and analyze data to make internal decision-making increasingly rich, complete, and informed (McAfee et al., 2012). This advancement enables SMEs to respond more proactively and dynamically to market changes.

This research's focus on integrated decision-making models enhances the theoretical understanding of how SMEs can leverage data-driven insights alongside entrepreneurial intuition to inform strategic decisions. This empirical evidence contributes to the intersection between data-driven and entrepreneurial decision-making, demonstrating that adopting a hybrid model can be particularly effective for SMEs undergoing DT for internationalization. Interestingly, our case study shows that SMEs exhibiting a strong entrepreneurial orientation, visionary leadership, and innovative culture do not suffer from patriarchal decision-making, i.e., a skeptical personal attitude toward digital initiatives (Giotopoulos et al., 2017; Penco et al., 2023; Soluk & Kammerlander, 2021). This means that SMEs should analyze the characteristics of their decision-making structures and nurture an organizational culture in line with the evolution they wish to undertake. Demonstrating the effectiveness of a small, family-style decision-making group in driving DT, this research contributes to understanding governance styles' effectiveness in DT contexts in SMEs, suggesting that an informal, collaborative, and visionary governance style can improve responsiveness and effectiveness in DT and strategic decisions.

Data-driven decision-making requires SMEs to continuously learn and move beyond established routines and knowledge, fostering the development of digital dynamic capabilities that foster growth and competitiveness (Matarazzo et al., 2021). In this regard, the case study adds to the theoretical discourse on dynamic capabilities by illustrating their critical role in enabling SMEs to adapt to and capitalize on digital technologies for innovation and growth. This research identifies the different digital capabilities at play along the entire DT journey, capturing their distinctiveness in enabling efficiency, strategy alignment, and innovation development.

The study also offers managerial implications, providing managers

with guidance on key factors facilitating DT. In their initial approach to DT, managers should define a comprehensive foundational digital strategy anchored with organizational goals to guide digital initiatives (Felicia-no-Cestero et al., 2023; Ross et al., 2017). Key strategic steps could consist of establishing strategic partnerships, essential to facilitate knowledge transfer, bridge capability gaps, and facilitate continuous learning. Managers should also invest in training to enhance employees' digital literacy before seeking additional digital talent. Since DT is not only a technological process but requires coordination and the ability to steer strategic renewal, developing dynamic managerial capabilities becomes an essential factor of success (Helfat & Martin, 2015).

In the initial stage and along the entire journey, firms should invest in developing digital capabilities, such as business strategy alignment, digital platform, big data analytics, and digital marketing capabilities, to improve business model transformation and operational efficiency while expanding the customer base (Bargoni et al., 2024; Ciacci et al., 2024; Ciacci & Penco, 2023; Marino-Romero et al., 2024). Developing product innovation capabilities is crucial to enable differentiation strategies during the intermediate DT stage. In the digital maturity stage, firms should prioritize agility and flexibility to adapt to evolving market dynamics and successfully cope with global crises (Teece et al., 2016).

6. Conclusions, limitations, and future research agenda

This research focuses on the DT of SMEs undergoing internationalization from an evolutionary perspective, highlighting the enabling and hindering factors that accompany this journey, particularly in the Italian dense and concentrated landscape of SMEs. The case study highlighted three crucial phases of the DT process – initial, intermediate, and maturity stage – that required a major strategic realignment aimed initially at pursuing greater efficiency, then differentiation and greater flexibility and agility suitable for proactively responding to ongoing market changes.

Despite the valuable contribution to the state-of-the-art, the study is not without limitations that could be overcome by future research.

First, the analysis of only one case study makes the results difficult to generalize. Therefore, future studies could extend the analysis by including cases from different countries and sectors to highlight differences related to the geographical context of SMEs and the dynamics of individual production sectors.

Finally, content analysis while adopting a codebook inferred from the literature presents problems of subjectivity in researchers' attribution of codes at the time of coding. This limitation has been partially overcome with the coding carried out by all researchers.

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