The Impact of Strategic Orientation on Digital Transformation: Empirical Evidence Based on Chinese-Listed Manufacturing Firms

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Abstract

In examining the antecedents of digital transformation, few studies have focused on how a firm's extant strategic orientation influences its digital transformation intensity, and how this relationship is affected by strategic leaders and the firm's life cycle. This work empirically tested these relationships based on the panel data of Chinese-listed manufacturing firms from 2007 to 2021. The findings suggest that a prospector orientation enhances, while a defender orientation weakens digital transformation intensity, and that the match between CEO background and strategic orientation amplifies the effects of both strategic orientations. Moreover, the relationships between the two strategic orientations and digital transformation intensity differ significantly at different stages of the firm's life cycle. This work enriches research on the driving factors of digital transformation at the strategic level. It inspires firms to understand the impact of their existing strategic orientation on new strategic change, choosing strategic leaders, and timing the transition.

Keywords: digital transformation, life cycle, strategy orientation, matching CEO to strategy, text analysis

1. Introduction

Digital transformation brings new opportunities for technological innovation and strategic change for global manufacturing companies (Verhoef et al., 2021). Numerous studies have recognized the role of digital transformation in enhancing enterprise productivity and innovation capabilities (Kohtamäki et al., 2020; Kohli & Melville, 2019; Vial, 2019). However, a large number of firms hesitate to invest in digital transformation because the process of transformation is expensive, time-consuming, and challenging (Chen et al., 2023). According to a survey conducted by Accenture in 2022, China only 17% of firms have achieved substantial transformation results by 2022.

To address this practical dilemma, scholars have shifted their focus from the performance outcomes to the drivers and processes of digital transformation (Kohtamäki et al., 2020). Among the many antecedents, factors at the strategic level are of particular concern since inadequate design and planning at this level often lead to transformation failures (Ghobakhloo & Iranmanesh, 2021; Vial, 2019).

Digital transformation, as a new strategic choice, enables organizations to establish a new organizational identity and value proposition (Bharadwaj et al., 2013). This strategic transformation is inevitably influenced by the firm's existing strategic orientation. However, no studies have focused on directly examining the impact of pre-existing strategic orientations on the intensity of digital transformation. Related studies seem to have divergent views. Some scholars believe that organizational inertia and resource rigidity bind firms to their old strategic orientations, leading to underinvestment and a lack of awareness, thereby negatively impacting the implementation of the new strategy (Vial, 2019). Scholars subscribing to this view argue that companies must adopt a radical, disruptive approach to digital transformation (Hanelt et al., 2021; Hess et al., 2016). For instance, Berman (2012) calls on companies to "redefine core elements for a radically reshaped value proposition (p. 20)". Conversely, others argue that a firm's accumulated resources and capabilities during the implementation of its original strategy can be transformed into an advantage that facilitates a smooth transition (Oberländer et al., 2021). According to this perspective, the success of digital transformation requires companies to deliver their core value proposition through incremental steps rather than disruptive changes, advocating a gentle and improved

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approach to gradual transformation (Klos et al., 2023; Li, 2020). A notable study by Furr and Shipilov (2019) concluded that "digital doesn't have to be disruptive, the best results can come from adaptation rather than reinvention (p. 1)".

To reconcile these two perspectives, this study asks the first research question: What is the impact of different strategic orientations on a firm's digital transformation intensity? We use the Prospector-Defender strategic orientation typology proposed by Miles and Snow (1978). This framework has been widely adopted in strategic management research to explore the optimal strategic choices that firms should adopt in different situations (Akindayomi & Amin, 2022; Bentley et al., 2013). Despite previous research identifying the adoption of varying strategic orientations in the digital transformation practices of different firms (Kurtz et al., 2021), scholars have not yet investigated the specific impacts of these two distinct strategic orientations on the transformation process, as well as the differences in performance between the two approaches. To avoid conceptual nuances, we follow Hinings et al. (2018) who understand digital transformation as "the combined effect of several digital innovations" and indicate differences in digital transformation between firms by the intensity of digital transformation, with firms considered to have higher intensity of digital transformation if they use more digital technologies to transform their products or provide more digital services. On this basis, this study asks the first research question: What is the impact of different strategic orientations on a firm's digital transformation intensity?

Managers are a key factor in ensuring the success of a company, and the selection of executives who match the strategic orientation of the company is seen as a means to achieve better performance (Kohli & Melville, 2019). Career background serves as a significant source of individual knowledge and capabilities, making it an important criterion for assessing the match between managers and their roles (G. Chen & Hambrick, 2012). Extant digital transformation studies have explored the role of career backgrounds and argued that certain backgrounds can bring resources such as knowledge competencies and industry perspectives to facilitate a company's digital transformation (Babin & Grant, 2019). However, these studies tend to ignore the differences in strategic orientation among firms, which leads to an incomplete understanding of the role of managers. In fact, the ultimate transformation of managers' personal resources into transformational strengths depends not only on personal characteristics and professional background but also on the match between the individual and the organization (Y. Li & Tan, 2013; Miles et al., 1978). This view is further supported by examples from practice. Mark Thompson led BBC's unsuccessful digital transformation. However, as the CEO of the New York Times, he successfully led the Times to become the first media outlet in the world to have more than 20 million digital subscriptions, becoming a benchmark for transformation in the media industry. Both theory and practice show that it is not sufficient to examine managers' personal characteristics alone, and that the match between managers and corporate strategy orientation may play a more important role. Digital transformation is a top-down process (Verhoef et al., 2021), and the CEO, as the highest executive in the organization, plays a pivotal role in this transformation (Evans et al., 2022). In the context of our study in China, the CEO's authority and influence are particularly pronounced (Wei & Ling, 2015), making them the most crucial figures in the practice of digital transformation within Chinese firms (Li et al., 2022). Therefore, we focus on the role of the CEO in digital transformation. Thus, we ask the second research question: How does the match between the CEO's career background and strategic orientation affect the strategic turnover process of digital transformation?

As a long-term and dynamic process, digital transformation requires different resources and encounters different contexts during different life cycle stages (Sirmon et al., 2010). Thus the same strategic factors or actions may play different roles (Dickinson, 2011). Few existing studies have understood digital transformation from a dynamic perspective. Therefore, we ask the third research question: How does the relationship between a firm's strategic orientation and digital transformation differ at different stages of a firm's life cycle?

To answer the above three research questions, this work draws on data from Chinese listed manufacturing firms and explores the direct impact of a firm's strategic orientation on digital transformation, the moderating role of the match between CEO career background and a firm's strategic orientation, and the heterogeneous effects of different firm lifecycle stages. The findings are expected to provide insights into digital transformation implementation, manager selection, and transformation timing.

2. Theoretical analysis and hypothesis

2.1. Strategic orientation and digital transformation Intensity

Strategic orientation refers to a firm's current action plan and direction. According to the framework

proposed by Miles and Snow (1978), strategic orientation can be categorized into four distinct types: Prospector, Defender, Analyzer, and Reactor. Among these, Reactor is characterized by passive responses to environmental changes and lacks research value, while Analyzer represents a balanced approach incorporating elements of both Prospector and Defender. To clearly distinguish between different types of firms, most studies have focused on the two distinct categories of Prospector and Defender (Bentley et al., 2013). Thus, this paper also discusses strategic orientation based on the "Prospector-Defender" category.

Prospectors are characterized by their eagerness to invest in new products and explore new markets, while Defenders prioritize cost efficiency and lean production. Although existing studies have identified that both Prospector and Defender strategies have their respective examples of transformation success (Kurtz et al., 2021), scholars have not yet conducted an in-depth exploration into the specific impacts of strategic orientations on digital transformation. We argue that significant differences exist between the two types in three dimensions: use of technologies, value creation, and structural changes (Hess et al., 2016; Matt et al., 2015). These differences result in distinct impacts of digital transformation intensity for firms.

Firstly, strategic orientation influences the willingness and direction of technology updates necessary for the firm's digital transformation. As digital transformation often involves uncertain outcomes and potential investment paradoxes that can affect business performance (Kohtamäki et al., 2020), Defenders may exhibit less enthusiasm to invest in digital technology due to higher perceived risks. Conversely, Prospectors display a greater appetite for technological updates and are less concerned about immediate returns. They are more likely to invest resources in digital technology and achieve technological changes.

Secondly, in terms of value creation, strategic orientation determines a firm's choice of markets. Defenders focus on the value of a single product market and are not willing to use its resources to explore new markets. Prospectors do not limit their product range and play a pioneering role in developing new products or expanding into new markets. The qualities of this type of business will drive companies to improve their big data analytics capabilities to tap into changing consumer needs and thus facilitate the integration between digital and business (Hinings et al., 2018; Vial, 2019).

Thirdly, in terms of structural changes, strategic orientation affects the flexibility of the organization. Defenders usually have a strict and stable hierarchical structure for cost-efficiency reasons (Miles et al., 1978). In contrast, Prospectors have a more agile and flexible organizational structure. In the digital era, the traditional multi-layered organizational scheme will reduce the speed of response, while the flexible organizational structure is more adaptable to digital transformation (Verhoef et al., 2021).

In summary, we conclude that firms adopting different strategic orientations possess distinct resource bases and exhibit significant differences in development patterns and flexibility across the three dimensions mentioned above, thereby influencing their subsequent digital behaviors. Therefore, we state the first series of hypothesis as follows:

Hypothesis 1: A firm's strategic orientation has divergent impacts on its digital transformation intensity.

Hypothesis 1a: Prospectors' strategic orientation positively affects firms' digital transformation intensity.

Hypothesis 1b: Defenders' strategic orientation negatively affects firms' digital transformation intensity.

2.2. Manager-strategy match

Manager-strategy match refers to the situation where managers' characteristics in terms of decision preferences and risk-taking match with the current strategic characteristics of the firm (Y. Li & Tan, 2013). Different studies have portrayed this match along various dimensions such as age, professional background, and psychological characteristics, and have interpreted its impact on firm performance from different perspectives (Huang & Gao, 2022; Banker et al., 2022). Contingency theory suggests that a match between managers and strategy leads to positive performance improvements for the firm (Banker et al., 2022; Thomas & Ramaswamy, 1996). On the other hand, in the literature on organizational change, this matching is seen as a reinforcing factor of inertia, which can hinder adaptability and negatively affect the firm (Huang & Gao, 2022; Haskamp et al., 2021).

It follows that whether manager-strategy matching plays a positive or negative role depends on the relationship between the strategy that the firm already has and the change that the firm is facing. Manager-strategy matching plays a positive role when the company's existing strategy plays a positive role in the change that the company is facing. Manager-strategy matching plays a negative role when the existing strategy plays a negative role in the change that the company is facing. In other words, in a digital transformation context, manager-strategy matching plays a moderating role in the degree to which a

company's existing strategy is oriented to digital transformation.

In this work, we narrow the broad concept of manager-strategy match to the match between the CEO's career background and strategic orientation. On one hand, the CEO wields a critical influence on the firm's strategy (Hambrick & Mason, 1984). Despite the emphasis on the significance of the top management team (TMT) in some studies, the CEO, as the core and most influential leader of the TMT substantially shapes the team's decisions (Firk et al., 2022; Georgakakis et al., 2017). On the other hand, investigating the match from the perspective of career background has a strong theoretical foundation. In the study by Thomas and Ramaswamy (1996), career background is regarded as a key managerial attribute for maintaining a match. They exemplified companies such as Apple, Chrysler, and Texas Instruments that preserve a match between the CEO (executive) and the firm's strategy. Despite the expansion of research to encompass factors like age, tenure, and even gender, career background remains a paramount foundation for studying the match (Beal & Yasai-Ardekani, 2000). Career background is closely related to CEO personalities, risk awareness, and other factors, and it significantly influences the firm's willingness to transform (Babin & Grant, 2019; G. Chen & Hambrick, 2012). Following Miles and Snow's framework, we classify CEOs into two categories based on their career backgrounds: Defenders' CEOs with expertise in finance and production fields, and Prospectors' CEOs with professional experience in research and development (R&D) and marketing (Miles et al., 1978).

We argue that the match between the CEO's career background and strategic orientation amplifies the impact of strategic orientation on the degree of digital transformation, but the effect of the match may vary due to the different types of strategies that have different effects on the firm (Y. Li & Tan, 2013). Specifically, Professional backgrounds provide managers with a certain amount of experience and skills, as this is the source of their competence. When a career background matches with strategy, it will bring good performance for the company. But also, good performance leads managers to believe that they are "doing the right thing", which will further reinforce the existing growth strategy and decision-making habits of the firm. Prospectors tend to be matched with CEOs who are more adventurous and technologically pioneering. The belief in investing in innovation projects and market expansion is reinforced by maintaining a certain level of performance, thus amplifying the positive effects of Prospectors' strategic orientation on digital transformation. For Defenders, a matched CEO will place greater emphasis on cost and efficiency and reduce investment in uncertain projects. While the match can keep the business profitable during times of change, cautious defensive activities may cause the business to miss more significant opportunities, exacerbating the negative effects of Defenders' strategic orientation. Therefore, we formally state our hypothesis as follows:

Hypothesis 2: The match between the CEO's career background and strategic orientation will amplify the impact of strategic orientation on digital transformation.

Hypothesis 2a: The positive effect of Prospectors' orientation is strengthened.

Hypothesis 2b: The negative effect of Defenders' orientation is strengthened.

2.3. Heterogeneous role of the firm life cycle

According to the firm life cycle theory, the development of a firm goes through three successive stages: growth, maturity, and decline stages. Different stages entail quite different competitive environments and available resources (Dickinson, 2011).

As digital transformation is often considered resource-consuming, firms at the mature stage are expected to be more willing and capable of carry out digital transformation because they usually have a relatively stable profit and resource base. Prospectors are more likely to have sufficient financial resources, technical expertise, and organizational capabilities for digital transformation, enabling them to better drive and support the implementation of digital transformation. Defenders prioritize maximizing the use of existing resources to maintain the status quo and stabilize gains. When companies have excess resources, these companies may prefer to apply digital technologies to improve existing business processes and customer experiences. Thus, when companies are at their mature stage, both Prospectors and Defenders are more engaged in digital transformation compared to companies at other stages. Thus, we propose:

Hypothesis 3: The impact of strategic orientation on digital transformation varies across lifecycle stages.

Hypothesis 3a: When companies are at their mature stage, a prospector orientation has a strengthened positive impact on digital transformation intensity.

Hypothesis 3b: When companies are at their mature stage, a defender orientation has a weakened negative impact on digital transformation intensity.

3. Data and sampling

3.1. Data sources

This paper uses Chinese A-share listed manufacturing companies from 2007-2021 as the research sample, excluding companies in the ST and *ST categories as well as those with special characteristics of problematic financial data and IPO current samples and samples with missing key variables during the sample period. We select surviving companies with more than five consecutive years in the observation period. The firm-level data required for the empirical study were obtained from the CSMAR database.

3.2. Variable constructions

3.2.1. Digital transformation intensity. This variable is constructed by using word frequency analysis based on previous studies. The study uses a lexicon covering four technical dimensions and one utilization dimension constructed by previous scholars. This feature lexicon fits the digital transformation process of manufacturing enterprises and covers a rich level of content (W. Chen, 2023). This paper draws on its research results and uses the sum of the number of enterprise digital transformation word frequencies plus one logarithm as a measure of firms' digital transformation intensity.

3.2.2. Strategic Orientation. We construct a business-level strategic score (*SA*) from secondary data by first obtaining six business-level indicators (Bentley et al., 2013): ① the ratio of R&D expenses to sales revenue, ② the ratio of the number of employees to sales revenue, ③ the annual growth rate of sales revenue, ④the ratio of SG&A to sales revenue,⑤the number of employees of standard deviation, ⑥the ratio of net fixed assets to total assets. At the same time, since the competitive strategy is often a continuous long-term process, the average values of the above indicators were calculated for the last 5-year window [t-4,t] (indicator ⑤ is the standard deviation) from 2007 to 2012 as the base period, respectively. Finally, the scores of the above six indicators are summed based on the year to obtain the business-level strategy scores, which range from 6 to 30. A higher score indicates a strong tendency of Prospector, while a lower score indicates a strong tendency of Defender.

The discrete strategy categorization variables were also constructed based on the strategy scores (Akindayomi & Amin, 2022; Bentley et al., 2013). Firms with scores in [6-12] are classified as Defender and construct *DSA*, which are recorded as 1 if the firm is classified as Defender and 0 otherwise. Firms with scores in [24-30] are marked as Prospectors and construct *PSA*, which is recorded as 1 if the firm is classified as Prospector, otherwise, it is 0.

3.2.3. CEO background - strategic orientation match. Defenders are suitable to be led by managers with experience working in finance and production areas, while Prospectors are suitable to be led by managers who have worked in R&D and marketing areas. Therefore, this study constructs Match as a variable based on this matching relationship as a measure of whether the CEO and strategic orientation match. Match is recorded as 1 if the firm's CEO career background in the current year is consistent with the firm's current type of strategic orientation, otherwise, it is recorded as 0. If there is a change of CEO in the current year, the new CEO in the current year is used as the observation sample for classification.

3.2.4. Life cycle. Based on Dickinson (2011), we classify the three stages of growth, maturity, and decline based on the net cash flows from the three types of activities of the firm: current operating, investing, and financing.

3.2.4. Control variables. In sum, 11 variables as control variables according to previous related work. More specifically, the control variables include firm age (*Age*), R&D expenses (*RD*), firm size (*Ass*) measured by total firm assets, firm profit (*Profit*), firm ownership (*Own*), chairman-CEO duality (*Dual*), and concentration of shareholding (*CS*) , average age (*AA*), average education level (*AE*), TMT internationalization (*TI*) and diversity of executive team backgrounds (*TB*) (G. Chen & Hambrick, 2012; W. Chen, 2023; Yu et al., 2023; Y. Chen et al., 2023; Guinan et al., 2019).

3.3. Model construction

We employ the following baseline econometric model in section 1. Where $DT_{i,t}$ refers to firms' digital transformation intensity, $SA_{i,t}^{t-4}$ refers to firm strategic orientation, $CV_{i,t}$ refers to the control variables, $Year$ and Ind refers to fixed effects variables including year and industry, $\varepsilon_{i,t}$ refers to random error term.

Further, considering the moderating effect of Match, we updated the model as shown in section 2. $M_{i,t}$ denotes the moderating variable mentioned above, and the other symbols have the same meaning as in the above equation. T-statistics are computed using standard errors corrected for clustering at the firm level and reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

$$DT_{i,t} = \varphi + \varphi_1 SA_{i,t}^{t-4} + \sum CV_{i,t} + \sum Year + \sum Ind + \varepsilon_{i,t} \quad (1)$$

$$DT_{i,t} = \varphi + \varphi_1 SA_{i,t}^{t-4} + \varphi_2 M_{i,t} + \varphi_3 M_{i,t} \cdot SA_{i,t}^{t-4} + \sum CV_S + \sum Year + \sum Ind + \varepsilon_{i,t} \quad (2)$$

4. Empirical results

4.1. Descriptive statistics

We collected 8579 data from 1,902 companies, and the results are shown in Table 1. We conducted Pearson's test for the main variables. Cointegration tests were conducted for all variables, and the variance inflation factor (VIF) was below the critical value of 10 with a mean value of 4.64, indicating that there were no serious cointegration problems in the selection of variables.

Table 1. Descriptive statistics

variables	N	mean	sd	min	max
DT	8772	0.879	1.122	0	5.525
SA	8772	18.091	3.781	6	30
PSA	8772	0.08	0.271	0	1
DSA	8772	0.073	0.26	0	1
Match	8772	0.041	0.199	0	1
Age	8772	15.142	5.548	1	50
RD	8772	22.329	1.352	0	27.89
Profit	8772	18.715	1.366	10.504	24.717
Ass	8772	21.796	1.14	18.76	27.307
Own	8772	0.314	0.464	0	1
Dual	8772	0.676	0.468	0	1
CS	8772	35.73	14.162	3.39	89.093
AA	8579	48.648	3.151	37.625	61.000
AE	8579	3.257	0.480	1.000	6.000
TI	8579	0.009	0.045	0.000	0.750
TB	8579	0.681	0.098	0.000	0.843

4.2. Main effect results

Table 2 reports the results of the main effect. In Group I, the full sample is tested using the strategy score as the independent variable. Column 1 is regressed by controlling only for industry and year effects, while column 2 is regressed by adding the aforementioned control variables. From the regression results, SA is positively significant at the 1% level using full samples. To ensure that the test results are not driven by discrete measures of strategy score (Bentley et al., 2013), this study replaces the *SA* with the two categorical variables of strategy type, *DSA* and *PSA*, and re-runs the regressions with the results shown in Group II. The results in columns 3-4 indicate that the coefficient of *PSA* is constantly positively and statistically significant at the 1% level, while *DSA* is consistently negative and statistically significant at the 1% level. This means that different strategic orientations of firms play different roles in digital transformation, and the core conclusion that Prospectors' orientations can play a positive facilitating role while Defenders' play a hindering role remains stable. Results are available upon request.

Table 2. Results of empirical test

	Group I		Group II	
Variables	(1)	(2)	(3)	(4)
SA	0.042***	0.040***		
	(7.65)	(7.31)		
PSA			0.428***	
			(5.14)	
DSA				-0.196***
				(-3.59)
N	8,579	8,579	8,579	8,579
R^2	0.315	0.340	0.335	0.326
Controls	NO	YES	NO	YES
Year/Ind FE	YES	YES	YES	YES

4.3. Moderating effect results

We report the results of the test for moderating effects in Table 3.

In column 1, while SA remains positively significant, the interaction term *SA*×*Match* is positively significant which indicates that CEO strategic match enhances the contribution of strategic orientation to the degree of digital transformation. After that, the effects of *PSA* and *DSA* are tested separately, and the interaction term between *PSA* and Match is shown in column 2. The results show that both PSA and thinteraction term are positive and both are highly significant, which indicates that CEO strategic match enhances the contribution of Prospectors' orientation to the degree of digital transformation. Column 3 shows the results of *DSA* and the interaction term. The results show that the *DSA* and interaction terms are both negative and highly significant, indicating that CEO strategic match enhances the negative effect of defensive strategic orientation on digital transformation. This indicates that when the CEO matches the strategic orientation of the firm, it enhances the existing impact of strategic orientation on digital transformation, and together with the above results hypothesis 2 is verified.

Table 3. Results of the match's moderating effect

	Group I	Group II	
Variables	(1)	(2)	(3)
SA	0.032***		

	(6.18)		
Match	-0.738***	-0.314***	0.703***
	(-3.07)	(-3.16)	(4.11)
*SA*Match*	0.051***		
	(3.49)		
PSA		0.285***	
		(3.66)	
*PSA*Match*		0.758***	
		(3.66)	
DSA			-0.137***
			(-2.28)
*DSA*Match*			-0.906***
			(-4.47)
N	8,579	8,579	8,579
R^2	0.345	0.338	0.336
Controls	YES	YES	YES
Year/Ind FE	YES	YES	YES

4.4. Heterogeneity analysis

The results of the regressions of "strategic orientation - digital transformation intensity" under different life cycles are shown in Table 4. To check whether the coefficient of difference between groups is significant, this study uses the Fisher's difference test, and the results are presented in the Diff column, which indicates the difference between the coefficient of the independent variable in the previous column and the coefficient of the independent variable in the current column.

The results show that for Prospectors, the degree of promotion of digital transformation intensity is significantly higher in maturity than at the growth stage firms and also significantly higher than at the decline stage firms. For Defenders, there is no significant difference between the coefficients of strategic orientation during the growth period and the maturity period, while the significant coefficients of the recession period are significantly lower than those of the maturity period. This result is somewhat inconsistent with our hypothesis. When the firm is at the mature stage, although the negative effect of Defender on the digital transformation intensity is weakened compared with the decline stage, there is no significant difference from the growth stage. The possible reason is that Defenders attach great importance to costs. Even when firms are at the mature stage and have sufficient resources, they are unwilling to invest more resources in digital transformation.

Table 4. Results of heterogeneity

Variables	Group I			Group II		
	growth	mature	decline	growth	mature	decline
PSA	0.336***	0.552***	0.400**			
	(3.51)	(4.76)	(2.08)			
DSA				-0.135***	-0.188**	-0.414***
				(-2.02)	(-2.35)	(-3.63)
N	4,452	3,339	785	4,452	3,339	785
R^2	0.346	0.341	0.353	0.340	0.326	0.357
Controls	YES	YES	YES	YES	YES	YES
Diff	\	-0.216***	0.152***	\	0.053*	0.226***
Year/Ind FE	YES	YES	YES	YES	YES	YES

5. Discussion and conclusion

This work aims to uncover how a firm's established strategic orientation impacts its digital transformation intensity, and how this relationship is impacted by its CEO and life cycle stages. The hypotheses are tested based on panel data of Chinese A-share-listed manufacturing firms from 2007-2021. We draw the main conclusions as follows.

First, established strategic orientations have a significant impact on digital transformation, but different strategic orientations have divergent impacts. A Prospector orientation enhances digital transformation intensity, while a Defender orientation hinders digital transformation intensity.

Second, when the CEO's career background is matched with the focal firm's strategic orientation, the match enhances the positive impact of the strategic orientation on digital transformation intensity for Prospectors, and amplifies the negative impacts for Defenders. In other words, the mismatch weakens the positive impact of Prospectors and the negative impact of Defenders.

Third, the impacts of strategic orientation on digital transformation intensity under different life cycle stages are explored. Prospectors' orientation has the most significant contribution to digital transformation when the company is at the mature stage. For Defenders, the negative impact is strongest when the company is at the decline stage.

5.1. Theoretical contributions

This study makes three distinctive theoretical contributions.

First, this work reveals how new strategic change (digital transformation) is influenced by existing strategic orientations, which in turn provides insights into whether companies should take a radical or incremental approach to change. Although scholars

have emphasized drivers of digital transformation at the strategic level, existing studies have focused on elements such as managers' professional backgrounds, political affiliations, team heterogeneity, and sense-giving behaviors (Ghobakhloo & Iranmanesh, 2021; Volberda et al., 2021). Few studies have used empirical data to examine the impact of an organization's existing strategic orientation on the intensity of digital transformation. Our study reconciles the debate on whether digital transformation should be achieved through radical changes or moderate improvements (Klos et al., 2023; Volberda et al., 2021). We draw on Miles and Snow's Prospector-Defender orientation framework and argue that a prospector orientation facilitates digital transformation, while a defender orientation has a negative impact.

Second, this study provides a novel perspective on understanding the role of CEOs in digital transformation. Whether "managers determine strategy" or "strategy selects the right managers" has been an important and enduring debate in strategic management research (Y. Li & Tan, 2013). The vast majority of studies have targeted the idea of "managers determine strategy" (e.g., the upper echelon) when examining the role of executives in digital transformation. However, the same managers may show different impacts in different companies during digital transformation, leading us to seek factors beyond the managers' individual characteristics. As a result, this work explores the hypothesis that "strategy determines managers" by coining the "match between CEO career background and strategic orientation" and explains the role of the match in corporate transformation. Our findings also support the duality of organizational inertia. Match as a source of inertia can be both a factor of organizational success and an impediment to change (Haskamp et al., 2021). For Prospectors, inertia plays a positive role. Their digital transformation is an incremental renewal using digital technology because the changes brought by digital transformation can be well understood by the organization and the firms are familiar with the changing processes. However, for Defenders, inertia plays a hindering role. Their digital transformation is expected to be radical since they are unfamiliar with the radical changing processes.

Third, the study incorporates the firm life cycle theory into empirical research on digital transformation, providing a more detailed and dynamic understanding of the drivers and constraints of digital transformation.

5.2. Practical contributions

This work also has three valuable practical insights.

First, an organization's existing strategic orientation has a significant impact on the investment and implementation of digital transformation. As a Prospector, a firm can use a moderate improvement way and hire a CEO whose career background is in R&D or marketing. But as a Defender, the firm should fully understand the cost of digital transformation. It may probably adjust its strategy orientation or consider hiring a CEO who is more familiar with exploratory activities, for example, a CEO with an R&D or marketing career background.

Second, the match between the CEO's career background and strategic orientation has a significant impact on transformation. Companies can consider selecting the right talent from R&D teams, marketers, and other departments with a strong external exploratory nature for training. For Defenders, digital transformation can be led by selecting more exploratory managers to overcome the negative effects of organizational inertia.

Third, compared with other life cycle stages, the mature stage is most suitable for firms to initiate digital transformation because firms at this stage have the best accumulation of financial resources, knowledge, and capabilities.

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