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Completed Research Paper

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Abstract

Although achieving strategic distinctiveness is critical for firms in dynamic industries, where the competitive landscape and market conditions frequently change, there is a paucity of research on the impact of information technology (IT) on a firm's strategic conformity (or distinctiveness). Motivated by the importance of strategic conformity and emergence of novel technologies, we draw on institutional theory and hypothesize that IT Novelty positively impacts strategic conformity. Second, drawing on resource-based view, we hypothesize that market dynamism and competitive dynamism negatively moderate the effect of IT Novelty on strategic conformity. Third, we hypothesize that the moderating impact is stronger for market dynamism than competitive dynamism. We find support for our hypotheses using a fifteen-year dataset from over 300 U.S. manufacturing firms. Our study contributes to theory and managerial practice by combining institutional and resource-based view perspectives to examine how IT Novelty shapes a firm's strategic conformity, particularly in dynamic industry conditions.

Keywords: IT novelty, strategic conformity, industry dynamism, firm level research

Introduction

Firms are constantly striving to achieve optimal strategic distinctiveness, which refers to the degree of differentiation in strategy a firm seeks to achieve in relation to its competitors while maintaining a level of similarity (Chen & Hambrick, 2012). The goal is to strike a balance between being unique enough to stand out in the marketplace and being similar enough to be considered a legitimate player in the industry (Finkelstein & Hambrick, 1990). Achieving optimal strategic distinctiveness is an ongoing process, and firms must continually evaluate their strategies and adjust them as needed to maintain the right balance between strategic distinctiveness and strategic similarity (or conformity). By doing so, firms can create a unique identity that sets them apart from their competitors while still being seen as legitimate players in the industry, thereby enabling superior firm performance (Zhao et al., 2017; Zhao et al., 2018).

Achieving optimal strategic distinctiveness is particularly critical for firms operating in highly dynamic industries, where the competitive landscape is constantly evolving and where firms face frequent and unpredictable changes in market conditions and consumer preferences. In such industries, where the status quo is often challenged, firms that fail to differentiate themselves from their competitors risk being left behind and losing market share (Taeuscher & Rothe, 2021). However, firms in highly dynamic industries must balance their focus on strategic distinctiveness with a focus on similarity with their competitors. This is because even as they strive to differentiate themselves from their competitors, they need to maintain

legitimacy and credibility in the eyes of their customers, investors, and other stakeholders (Miller et al., 2013). Nonetheless, industry dynamism may imply that firms need to have more flexibility to differentiate themselves from competitors.

Although prior literature on IT business value has focused on the interplay between IT and firm performance or the strategic focus of a firm in shaping its IT capabilities (e.g., Mithas et al., 2013; Saldanha et al., 2020), there is a paucity of research that examines the impact of IT on a firm's strategic conformity. Our study addresses this theoretically and practically important research gap by focusing on *strategic conformity*, defined as the "extent to which a firm's strategy conforms to the central tendency of the entire industry" (Finkelstein & Hambrick, 1990). Motivated by the importance of strategic conformity and the emergence of novel technologies (e.g., artificial intelligence, Internet of Things) that pervade the digital technology landscape, we draw on institutional theory (DiMaggio & Powell, 1983) and propose that a firm's adoption of novel information technology (what we call *IT Novelty*) shapes the firm's strategic conformity. We empirically examine the effect of IT Novelty on strategic conformity using a large sample of U.S. firms spanning 15 years. Our analysis shows that IT Novelty enables firms to achieve strategic conformity. Our results highlight a critical paradox, whereby firms that adopt a novel position in terms of their IT portfolio tend to be conservative in their strategic position. Further, we examine this relationship under the influence of two facets of industry dynamism — market dynamism (which reflects the degree to which industries undergo changes in growth) and competitive dynamism (which results from within-industry variations associated with the competitive composition of the industry) (Aldrich, 2008; Feng et al., 2017; Porter, 1980). Drawing on resource-based view, we propose that market dynamism and competitive dynamism negatively moderate the effect of IT Novelty on strategic conformity. Finally, we propose that the negative moderating effect of market dynamism is stronger than the moderating effect of competitive dynamism on the influence of IT Novelty on strategic conformity. We find support for our hypotheses using 4500 firm-year observations from 308 firms publicly traded in United States for the period of 2004-2019.

Our main contributions lie in extending the existing understanding of the role of IT in shaping a firm's strategic orientation (e.g., Chan et al., 1997). Specifically, we demonstrate that IT aids firms in adapting to changing environmental conditions and achieving optimal strategic distinctiveness, and environmental factors play a critical moderating role. Further, we bridge the two schools of thought on strategic distinctiveness – the Institutional and the Resource Based View – by introducing the concept of IT Novelty into this discourse. For managers, our study provides insights for organizational decision-making, as the impact of the two facets of industry dynamism on the effect of IT Novelty on strategic conformity differs. Thus, firms may need to adjust their strategies based on the type of dynamism most affecting them.

Theoretical Background

We provide a theoretical background on the three key constructs we employ in our investigation – strategic conformity, IT Novelty, and industry dynamism.

Strategy and Strategic Conformity

In line with Mintzberg (1978)), we use the term strategy to refer to a firm's realized strategy, which is an observable post-hoc pattern in critical decisions made by the firm. This paradigm does not focus on a firm's intended strategy or *a priori* principles and plans. The latter are subjective, perceptual phenomena that, according to Mintzberg (1978)), are insufficient on their own to fully capture and articulate the complex nature of strategy. Rather, strategies often develop gradually as a pattern in a stream of decisions. Thus, while the term strategy frequently connotes intention and purposeful planning, we study firms' realized strategy, consistent with the vast majority of empirical research on strategy (Bu et al., 2022; Hambrick & Mason, 1984; Henderson et al., 2006; Hitt et al., 2001; Zhang & Rajagopalan, 2010).

A growing body of research suggests that a crucial approach to conceptualizing a firm's strategy is to evaluate the extent to which it aligns with the central tendencies of its industry, which (Finkelstein & Hambrick, 1990) referred to as "strategic conformity". Strategic conformity entails assessing the degree to which firms in an industry adopt comparable strategies in order to comply with established industry norms and standards (Finkelstein & Hambrick, 1990). Objective indicators can be utilized to determine the extent to which firms exhibit such realized conformity or deviance. Thus, strategic conformity is indicative of the extent to which a firm adheres to prevailing industry norms.

The consequences of strategic conformity have been studied by scholars from two distinct schools of thought. Institutionalists argue that strategic conformity leads to favorable outcomes for firms, including augmented resources (Cohen & Dean, 2005; Higgins & Gulati, 2006), improved stock market valuations (Zuckerman, 2000) and heightened support from stakeholders (Choi & Shepherd, 2005). Adhering to industry norms fosters legitimacy and, in turn, potentially secures greater access to resources such as capital, talent, and clients, which can ultimately enhance organizational performance (Baum & Oliver, 1991; Choi & Shepherd, 2005; Deephouse, 1999; Higgins & Gulati, 2006; Miller & Chen, 1996). In summary, institutionalists argue that conformity results in superior financial returns.

In contrast, advocates of the resource-based view (RBV), which posits that a firm's competitive advantage arises from its distinctive resources and capabilities (Barney, 1991), contend that strategic distinctiveness is crucial for firms to establish a unique and valuable position in the market and attain a sustained competitive advantage. RBV asserts that firms with resources that are rare, valuable, inimitable, and non-substitutable achieve superior returns (Helfat et al., 2023; Newbert, 2008; Peteraf, 1993; Ray et al., 2004). Thus, RBV places great emphasis on originality, such as unique resources or skills that allow a firm to distinguish itself through valuable, inimitable assets or capabilities; thereby, RBV argues that distinctiveness leads to better performance (Helfat et al., 2023; Newbert, 2008; Peteraf, 1993; Ray et al., 2004).

In recent literature, the concept of "optimal strategic distinctiveness" has been gaining credence, advocating that firms strive for a delicate balance between similarity and distinctiveness in relation to their competitors to establish a unique brand identity. According to Chen and Hambrick (2012)), this equilibrium permits firms to attain both legitimacy and differentiation. Legitimacy is essential as it allows firms to comply with the established norms and standards of their industry; meanwhile, differentiation enables firms to create a unique brand identity that sets them apart from their rivals (Taeuscher & Rothe, 2021; Zhao et al., 2017; Zhao et al., 2018). Consequently, firms that achieve optimal strategic distinctiveness are better equipped to compete effectively within their industries (Chen & Hambrick, 2012; Taeuscher & Rothe, 2021; Zhao et al., 2017; Zhao et al., 2018).

Although scholars differ on the consequences of strategic conformity, it is well-established that such consequences are significant. Therefore, it is important to investigate the antecedents of strategic conformity. Our study aims to achieve this objective from an IT perspective. Prior works on antecedents of strategic conformity and distinctiveness have drawn primarily on upper echelons theory. Finkelstein and Hambrick (1990)) were among the first to explore this concept, analyzing 100 large firms in the computer, chemical, and natural-gas distribution industries. They found that long-tenured top managerial teams tended to follow industry norms, especially in industries with high managerial autonomy. Miller et al. (2013)) investigated strategic conformity in relation to family ownership among Fortune 1000 firms. Their findings showed that family-owned businesses were more likely to conform to industry norms, and this tendency increased with the degree of family involvement, succession of family chief executive officer (CEOs) and chairpersons, and concentration of votes with family owners. In another study of S&P 500 firms, Wowak et al. (2016)) found that the impact of charismatic CEOs on strategic distinctiveness became more pronounced as their tenure increased. Further, Kang et al. (2021)) analyzed around 1,200 firms over 19 years and found that CEOs with unusual names were more likely to pursue strategies that deviated from their peers. This tendency was more marked among CEOs who were more self-assured, wielded greater power, and operated in sectors with more growth opportunities. Our study departs from prior literature that largely centered on the impact of top management team (TMT) or CEO characteristics on strategic conformity. We augment the literature by incorporating IT Novelty as an antecedent to strategic conformity, an association that remains unexplored in prior literature.

IT Novelty

Firms often differ in the suite of IT applications that they deploy. While some firms implement unique (compared to the market) IT applications, other firms may only implement new IT applications once they have become the norm in the industry (Lu & Ramamurthy, 2011; Mithas et al., 2013; Ravichandran & Liu, 2011). We conceptualize the uniqueness of a firm's IT portfolio as *IT Novelty*.

Several related concepts have been studied in information systems (IS) literature in the past. For example, Xue et al. (2017)) investigated the concept of "proactiveness" in the context of firms' investments in and development of IT infrastructure. This refers to firms taking a leading role in investing in IT and developing

IT infrastructure. The authors found that firms' proactiveness in obtaining or developing IT infrastructure, in the categories of decentralized computing equipment, centralized computing equipment, and network communication equipment, positively affect firm risks and returns. Wang (2010)) explored this topic in the context of "IT fashion" and conceptualized the "hottest IT" as a portfolio of IT applications that industry experts collectively deemed to be new, efficient, and at the forefront of practice at the time of the study. The study found that investments in these particular IT applications were positively associated with firm reputation, both individually and jointly. Another related concept is "IT proactive stance", as studied by Lu and Ramamurthy (2011)), which refers to a firm's ability to proactively search for ways to embrace new IT innovations or exploit existing IT resources to address and create business opportunities. Their empirical analysis found a positive effect of such IT capability on organizational agility. Finally, Saldanha et al. (2022)) investigated the "innovativeness of electronic services" as the newness to the market of electronic service offerings in the context of credit unions. They found that innovativeness of electronic services negatively moderates the influence of self-service technologies on firm customer growth.

The existing literature on the impact of IT portfolio uniqueness and related concepts has primarily centered around firm performance and other firm attributes. Our study seeks to extend the existing literature by introducing a measure of IT Novelty and studying its impact on firm strategy, particularly strategic conformity, which is an unexplored relationship in current literature.

Industry Dynamism

Industry dynamism denotes unstable and erratic changes that occur in the firm's business environment, posing threats to firms (Keats & Hitt, 1988). According to the information uncertainty perspective, when there is an increase in industry dynamism, firms face unclear situations with few well-developed alternatives and inadequate evaluation criteria (Drazin & Van de Ven, 1985; Eisenhardt & Martin, 2000). This can constrain the top management's ability to make informed decisions (Drazin & Van de Ven, 1985; Eisenhardt & Martin, 2000; Gupta et al., 2021; Hambrick & Mason, 1984; Lee et al., 2023).

Consequently, the impact of firm-level factors (particularly those related to or controlled by CEOs) on key performance and strategic indicators is influenced by industry dynamism. For example, existing literature on upper echelons reveals that the effects of CEO charisma and narcissism on a firm's CSR profile (Gupta & Misangyi, 2018), firm's refocusing program on CEO compensation (Pathak et al., 2014), firm ownership on strategic variety (Larrañeta et al., 2014), and tenure on CEOs' cognitive complexity (Graf-Vlachy et al., 2020) are moderated by industry dynamism.

Previous studies in IS have reported industry dynamism as a moderator. For instance, Chakravarty et al. (2013)) find that industry dynamism influences the relationship between IT competencies and organizational agility. Research identified the role of IT assets portfolio in determining whether firms pursue efficiency or innovation orientation, with industry dynamism serving as a moderating variable (Xue et al., 2012). Similarly, the impact of IT investment intensity deviation on IT and outsourcing investments has been explored, with industry dynamism as a moderating factor (Mithas et al., 2013). Organizational commitment to IT has also been studied in relation to employee job satisfaction and work-life balance, with industry dynamism as a significant moderator of this relationship (Engelen et al., 2022). The moderating effect of strategic IT alignment on the relationship between IT investments and firm performance has been reported to be moderated by industry dynamism (Sabherwal et al., 2019). Finally, Lee et al. (2015)) studied the moderating effect of industry dynamism on the mediation effect of operational ambidexterity on the relationship between IT ambidexterity and agility and found significant results. Our study augments the literature by studying the moderating effect of industry dynamism on the relationship between IT Novelty and strategic conformity.

The effect of industry dynamism on firms can arise from both – between-industry variations and within-industry variations. Dynamism arising from between-industry variations, i.e., the extent of change experienced across different industries, has been conceptualized as market dynamism (Dess & Beard, 1984; Eisenhardt, 1989; Feng et al., 2017; Miller, 1988). Market dynamism reflects the degree to which industries undergo changes in growth. Conversely, competitive dynamism results from within-industry variations, particularly those associated with competitiveness (Aldrich, 2008; Feng et al., 2017; Porter, 1980). Our study places emphasis on the influence of both – market dynamism and competitive dynamism – as critical factors that shape the influence of IT Novelty on strategic conformity.

Hypotheses Development
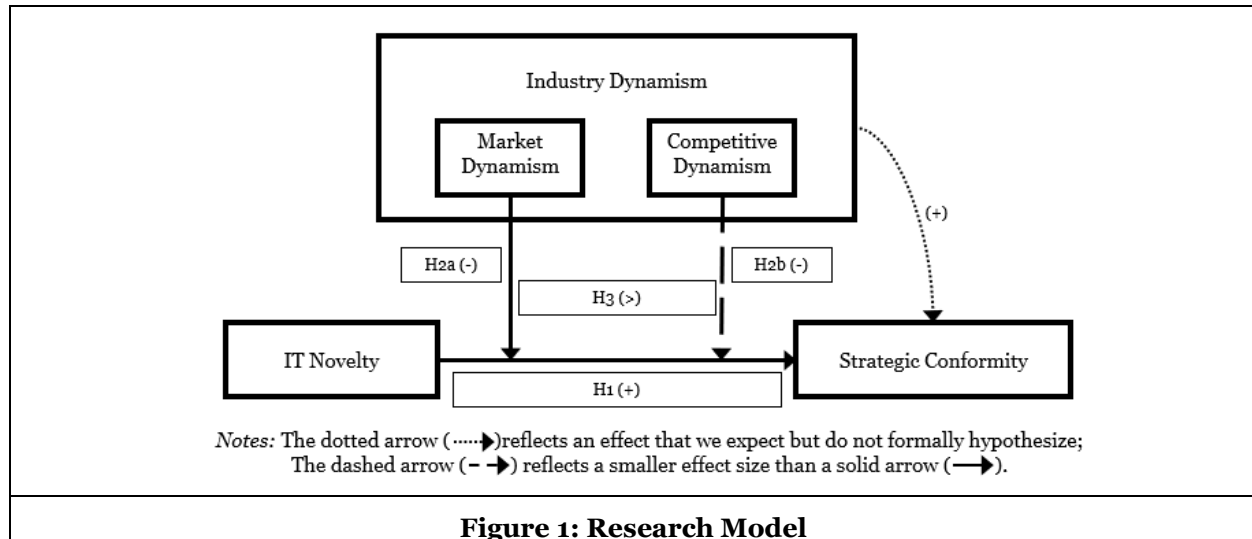

Figure 1: Research Model

Figure 1 shows our research model. To develop our first hypothesis, we draw on institutional theory as our main overarching framework, which suggests that firms face normative pressures in their institutional environment (DiMaggio & Powell, 1983). These pressures relate to norms derived from shared values, beliefs, and expectations about standard behavior within an industry (DiMaggio & Powell, 1983). Firms achieve legitimacy by conforming to these norms and can thus ensure their long-term survival. We suggest that firms with greater IT Novelty challenge the existing norms of their industries. This creates a tension: On one hand, firms try to differentiate themselves from competitors through the implementation of novel IT. On the other hand, firms need to conform to their industries' institutional norms. By conforming to the business strategy prevalent in their industries, firms reduce the perceived risk associated with their pursuance of novelty in IT and gain acceptance and legitimacy from other industry stakeholders (Deephouse & Suchman, 2008).

Institutional theory suggests that industry norms result in prevailing and self-reinforcing strategies. Firms often experience difficulties when they deviate from the dominant institutional logic, because firms can potentially face exclusions and sanctions from other industry stakeholders. Hence, firms with greater IT novelty can face challenges to be successful in the industry, unless they conform their strategy with the dominant institutional logic. For example, if the prevailing industry strategy is to focus on high margins and outstanding customer care, a firm with novel IT systems will take additional measures toalign with this logic so that it is not perceived as an outlier. Hence, to gain more legitimacy in the view of stakeholders (Miller et al., 2013), firms with greater IT Novelty will conform to the dominant institutional logic in their industry.

Alternatively, the resource-based view (RBV) argues that resources that are valuable, rare, difficult to imitate, and difficult to substitute can accord a competitive edge to firms (Barney, 1991). An implication of RBV is that companies equipped with novel IT might gain a competitive edge, gains from which can be enhanced further by pursuing strategic distinctiveness. RBV, however, has been criticized for ignoring contextual elements (Yang & Konrad, 2011) which are critical for our analysis since IT Novelty and strategic conformity are both contingent the industry environment of the firm. Thus, we posit that insights stemming from institutional theory are more relevant than those offered by the RBV.

Hence, we hypothesize:

H1: IT Novelty has a positive effect on strategic conformity.

Institutional theory suggests that firms are shaped by values and norms of their institutional environment (DiMaggio & Powell, 1983). At same time, market dynamism influences the extent to which firms conform to these values and norms. In conditions of high market dynamism, existing values and norms are less

ingrained in firms' practices, and thus firms have more flexibility to pursue novelty in IT and differentiate themselves from competitors, without being penalized by industry stakeholders with loss of legitimacy. We theorize that firms with greater IT Novelty face a lesser need to conform to the dominant institutional logic in their industry. By leveraging novelty in IT and rare resources, firms can establish distinct strategies and yet gain legitimacy in the eyes of stakeholders. Since IT Novelty helps firms to distinguish from their competitors, it can help firms to cope with dynamism in the firm's industry.

We suggest that similar arguments apply when firms face changes in competition levels in the industry, i.e., when firms face greater competitive dynamism. For firms that face greater competitive dynamism, IT Novelty helps such firms distinguish themselves from their competitors. In industries with greater competitive dynamism, firms face higher levels of disruptions and change. Hence, stakeholders may be more supportive of firms pursuing IT Novelty in such industries. Therefore, firms in industries with high competitive dynamism will face a lesser need to strategically conform to the norms of the industry. In line with these arguments, we hypothesize:

H2a: Market dynamism negatively moderates the influence of IT Novelty on strategic conformity.

H2b: Competitive dynamism negatively moderates the influence of IT Novelty on strategic conformity.

We next theorize the differences in strengths of the moderating effects of market dynamism and competitive dynamism. In conditions of high market dynamism, there is a greater need for firms to adapt to the changing customer demand and preferences (Appiah-Adu & Singh, 1998). In such conditions, IT Novelty is more likely to be seen as a means to enable adaptation to changing preferences of market demand. Thus, under high market dynamism, there is a greater need for distinctive strategies to satisfy the changing needs of customers. Therefore, firms with greater IT Novelty will find a lesser need to conform in their business strategies with their industry peers to gain legitimacy. In comparison, in industries with greater competitive dynamism, there is lesser need for firms to be distinctive in their strategy because competitive dynamism does not necessarily involve changes in customer preferences. Hence, we posit:

H3: Compared to competitive dynamism, market dynamism has a stronger negative moderating effect on the influence of IT Novelty on strategic conformity.

Method

Data

To test our research model, we used archival panel data on firms spanning multiple industries in the United States. We collected archival data for this study from three main sources – the *Euromonitor Passport* database, *Compustat*, and *Factiva* database.

To determine the multi-industry classification of firms and to calculate measures of central tendencies and deviations for each industry, we extracted data on every industry and firm available in the *Passport* database. This database provides global coverage of 17 industries and is recognized by marketing, management, and IS scholars and practitioners as a reliable and accurate source of information (e.g., Andrade-Rojas et al., 2021; Saldanha et al., 2020). The *Passport* database contains detailed information on market size, market share, brands, product categories, and the number of products available across multiple distribution channels. We obtained data on both private and publicly listed firms to accurately represent industry standards. We also extracted information related to industry classification and market share for each of the firms from *Passport* database.

Quantifying IT systems and assessing firms' IT-enabled capabilities and investment initiatives through their news announcements is a well-established approach (Andrade-Rojas et al., 2021; Joshi et al., 2010; Saldanha et al., 2020). Based on prior research, we sourced our data from a) *Factiva* database, which includes more than 30,000 news sources, and b) computer journals *Computerworld, Networkworld, eWeek, eWeek Security Watch, Infoworld,* and *InformationWeek*. These journals consistently report IT implementations and IT spending of firms in U.S. (Andrade-Rojas et al., 2021; Joshi et al., 2010; Saldanha et al., 2020). Thus, we ensured that our data sources were comprehensive and covered firms' IT initiatives.

Further, we used the *Compustat* database to collect data on firm financials. After merging the datasets, our sample contains more than 4000 firm-year observations from 302 firms publicly traded in United States for the period of 2004-2019.

Variable	Description	References
Main Variables		
Strategic Conformity	Negative of the absolute deviation of the firm's resource allocations across six strategic dimensions from the mean of its industries. Strategic Conformity for firm i in year t is: $$Strategic\ Conformity_{i,t} = (-1) * \sum_{l=1}^{6} \sum_{k=1}^{17} \left| S_{i,t,k,l} - \bar{S}_{t,k,l} \right|$$ where $S_{i,t,k,l}$ is the value of strategic dimension l for firm i in year t, weighted by the ratio of the firm's sales in industry k to the total annual sales of the firm; $\bar{S}_{t,k,l}$ is the mean value of strategic dimension l in year t for industry k. The strategic dimensions include advertising intensity (advertising expense/sales); inventory level (inventories/sales); plant and equipment newness (net plant and equipment/gross plant and equipment); research and development intensity (research and development expense/sales); non-production overhead (selling, general and administrative expense/sales); and financial leverage (total debt to equity).	(Crossland et al., 2014; Deephouse, 1999; Finkelstein & Hambrick, 1990; Miller et al., 2013; Wowak et al., 2016)
IT Novelty	Novelty of the firm's IT systems, in terms of newness. IT Novelty for firm i in year t is: $$IT\ Novelty_{i,t} = \sum_{k=1}^{17} M_{i,k,t} \times \frac{\sum_{j=1}^{65} (1 - p_{j,k,t}) \times IT_{i,j,t}}{\sum_{j=1}^{65} IT_{i,j,t}}$$ where $p_{j,k,t}$ is the ratio of sample firms in industry k that had IT j in year t to the total number of sample firms in industry k in year t; $IT_{i,j,t}$ indicates whether firm i had IT j in year t, taking the value of one if IT j is present, zero otherwise; $M_{i,k,t}$ is the percentage share of firm i's sales in industry k in year t.	(Karahanna et al., 2019; Saldanha et al., 2022; Weigelt & Sarkar, 2009)
Moderators – Industry Dynamism		
Market Dynamism	Degree of volatility faced by firms in a particular market, measured as the standard deviation in industry sales growth over five years.	(Feng et al., 2017; Keats & Hitt, 1988)
Competitive Dynamism	Changes in heterogeneity and concentration of competitors of a firm, measured as the 5-year change in industry Hirschman-Herfindahl Index (HHI).	(Feng et al., 2017; Keats & Hitt, 1988)
Control Variables		
Firm Performance	A firm's aggregate financial performance, measured by Return on Assets (ROA), calculated as ratio of net income to total assets.	(Chang et al., 2013)
Firm Age	Number of years since the firm's incorporation, measured as the focal year minus incorporation year of the firm.	(Saldanha et al., 2020)
Firm Size	The scale of business operations of a firm, measured as the natural log of total annual sales revenue.	(Saldanha et al., 2020)
Performance Deviation	A firm's aggregate financial performance relative to its competitors, measured as a three-year moving average of deviation of the firm's ROA from the median industry ROA.	(Kathuria et al., 2023)
Cashflow	The net amount of cash generated (or consumed) by a firm's business operations, measured as Earnings before interest, taxes, depreciation, and amortization (EBTIDA).	(Kathuria et al., 2023)
Firm Profitability	The ability of a firm to generate profits from its activities, measured as the ratio of operating income before depreciation to sales.	(Fu & Huang, 2016)

Table 1. Description of Variables

Variables

Strategic Conformity

Following Finkelstein and Hambrick (1990)), Deephouse (1999)), Miller et al. (2013)), Crossland et al. (2014)), and Wowak et al. (2016)), Strategic Conformity was measured by analyzing six dimensions: (a) advertising intensity (advertising expense/sales), (b) inventory level (inventories/sales), (c) plant and equipment newness (net plant and equipment/gross plant and equipment), (d) research and development (R&D) intensity (R&D expense/sales), (e) nonproduction overhead (selling, general, and administrative expense/sales), and (f) financial leverage (total debt/equity). These dimensions are suitable for measuring strategic conformity as these are controllable by CEOs, have a significant influence on firm performance, represent important and specific aspects of firm strategy, and are comparable across firms (Finkelstein & Hambrick, 1990). Along each dimension, we weighted the firm's strategic allocation across its various industries based on the percentage share of its sales coming from the industry. We then used these industry-weighted firm-level allocations to calculate industry averages across all six dimensions. We determined the firm's deviation from this industry average for each dimension in each industry and year by calculating the absolute difference between the firm and the average of all other firms in the same industry (in *Passport* dataset). We then created the standardized score of each dimension by industry and year and used the negative of the sum of these standardized scores as our composite measure of strategic conformity.

IT Novelty

Consistent with prior research (Karahanna et al., 2019; Saldanha et al., 2020; Weigelt & Sarkar, 2009), we measure IT Novelty in terms of newness (to the market) of the firm's IT applications. We first create a portfolio of IT applications that were in use by each firm in each year, specifying $IT_{ijt} = 1$ if a firm i had the IT j in year t; and 0 otherwise. Then, for each industry k, we calculate a time-varying weight for each IT application based on its diffusion in that industry. To ensure that less diffused services have higher values for the degree of newness, we defined the expression $(1 - p_{jkt})$, where p_{jkt} is the percentage of sample firms in industry k that had IT j in year t. Combining these two components, we capture the average level of novelty of a firm's IT portfolio in each industry, computed as the sum of IT applications in use weighted by the degree of newness of each application in each industry varying by year. We then created the standardized score of newness by industry and year, and used the sum of these standardized scores, weighted by the percentage share of its sales coming from the particular industry, as our composite measure of IT Novelty. IT Novelty is thus, a continuous variable with higher values indicating a higher level of newness of the focal firm's IT portfolio.

The weighting scheme used to measure IT Novelty corresponds with the notion of "novelty" as rare because of newness. Applications that are rarer receive higher weights, whereas more common applications receive lower weights. As an application becomes more common, it is perceived as being less novel. This measurement approach is particularly attractive for our analysis because it represents the degree of novelty of the firm's IT applications portfolio across different industries at any given year and captures changes in the degree of IT novelty over time. This measure is similar to the Saidin index, which has been used extensively in prior research (e.g., Karahanna et al., 2019; Saldanha et al., 2020; Weigelt & Sarkar, 2009).

Industry Dynamism

We include two dimensions of industry dynamism: market dynamism and competitive dynamism. Following Keats and Hitt (1988)) and Feng et al. (2017)), , we measure market dynamism as the 5-year standard deviation of growth in net industry sales. To calculate competitive dynamism, we used the 5-year standard deviation in Hirschmann-Herfindahl Index (HHI) (Feng et al., 2017; Grossack, 1965; Keats & Hitt, 1988).

Control Variables

We include several control variables that may influence a firm's strategy and IT portfolio, which enhances the credibility of our empirical tests by ruling out alternative explanations. We control for Firm Age, measured as the number of years the firm has been in operation since incorporation, since older firms may systemically differ from newer firms in their resource allocation strategy and IT applications due to learning

effects (Saldanha et al., forthcoming). We control for Firm Size, measured as the log of annual sales revenue (Saldanha et al., 2022). We control for three possible sources of financial resources – reserves, surpluses, and debt (Kathuria et al., 2023). Accordingly, we control for Performance Deviation, measured as the three-year moving average of the deviation of the firm's ROA from the median industry ROA; Cash Flow, measured as earnings before interest, taxes, depreciation, and amortization; and, Firm Profitability, measured as the ratio of operating income before depreciation to sales. Finally, we control for the effect of Past Performance (Chang et al., 2013; Khuntia et al., 2019). The independent variables and control variables were lagged one year prior to the dependent variable to ensure temporal precedence. Table 1 shows the description and measurement of the variables, and Table 2 provides descriptive statistics and correlations.

Variable		Mean	Standard Deviation	Pair-wise Correlation								
				1	2	3	4	5	6	7	8	9
1	Strategic Conformity	0	3.16	1.000								
2	IT Novelty	-11.386	68.545	0.127*	1.000							
3	Market Dynamism	.157	.112	0.215*	0.284*	1.000						
4	Competitive Dynamism	.021	.054	0.009	-0.008	-0.043*	1.000					
5	Firm Age	72.838	50.803	0.076*	0.147*	0.216*	0.070*	1.000				
6	Firm Size	8.256	1.914	0.133*	0.447*	0.388*	0.008	0.344*	1.000			
7	Cashflow	30.196	70.496	0.026	0.391*	0.282*	-0.008	0.172*	0.588*	1.000		
8	Firm Profitability	.139	.889	-0.005	0.009	0.025	-0.003	0.046*	0.108*	0.050*	1.000	
9	Firm Performance	.062	.109	0.052*	0.030*	0.068*	-0.020	0.035*	0.097*	0.079*	0.104*	1.000
10	Performance Deviation	.891	5.804	-0.025	-0.052*	-0.131*	-0.002	0.017	-0.004	0.034*	0.043*	0.512*
Note: * p < 0.05												
Table 2: Descriptive Statistics and Correlations												

Estimation Approach and Econometric Model

Since our data is longitudinal in nature, in line with prior literature (e.g., Kathuria et al., 2021; Ning et al., 2020; Saldanha et al., forthcoming), we applied panel data models to control for firm-level heterogeneity over time. We considered fixed-effects and random-effects regression models. Based on Hausman tests (Hausman, 1978), we fail to reject the null (p>0.10), suggesting that random-effects models are consistent. We conducted the Breusch-Pagan Lagrange Multiplier test (Breusch & Pagan, 1980) (p < 0.01) which indicated the presence of random effects, thereby rejecting the pooled OLS model. Due to the cross-sectional time-series nature of our data, there is potential for panel-specific heteroskedasticity, as the variance of the error term may change over time and across firms. Therefore, we compute the Modified Wald statistic (p<0.01) to check for group-wise heteroskedasticity in the residuals of our random-effects regression model, which indicates the presence of panel-specific heteroskedasticity (Greene, 2003; Wooldridge, 2010) . Hence, we use a random-effects model with robust standard errors, thereby accounting for the lack of homoskedasticity by using Sandwich estimators.

To check for time-specific effects, we performed the random-effects regression with year dummies included in the model. We performed a test of joint significance of the coefficients of the year dummies, which indicated that there are no significant time-specific effects. Therefore, we did not include year dummies in subsequent models.

To assess whether autocorrelation is an issue, we perform robustness tests by imposing an autoregressive AR1 structure in the error terms to account for autocorrelation. We estimate models using a first-order autoregressive random-effects estimator. We check for autocorrelation using the Baltagi–Wu locally best invariant test (Baltagi & Wu, 1999), which is a modified Durbin–Watson test for serial autocorrelation in unequally spaced unbalanced panel data (Durbin & Watson, 1950; Durbin & Watson, 1971). The test did not detect any evidence of autocorrelation.

To address endogeneity concerns, we lag all the independent variables and control variables by one year prior to the dependent variable. Thus, to test our hypotheses, we estimate the following specification using the methodological approach described above:

$Strategic\ Conformity_{i,t}$
$$= f\big(IT\ Novelty_{i,t-1}, Market\ Dynamism_{i,t-1}, Competitive\ Dynamism_{i,t-1}, IT\ Novelty_{i,t-1}$$
$$\times\ Market\ Dynamism_{i,t-1}, IT\ Novelty_{i,t-1}$$
$$\times\ Competitive\ Dynamism_{i,t-1}, Control\ Variables_{i,t-1}\big)$$

Results

Parameter Estimates

Dependent Variable: Strategic Conformity	(i) Controls	(ii) Direct Effects	(iii) Direct Effects	(iv) Interaction Effects	(v) Interaction Effects	(vi) Interaction Effects
IT Novelty		.003**	.004*	.01***	.005**	**.01***
		(.002)	(.003)	(.003)	(.003)	**(.003)**
Market Dynamism			4.737**	6.075***		5.974***
			(2.724)	(2.495)		(2.497)
Competitive Dynamism			1.916*		1.557*	1.314
			(1.235)		(1.182)	(1.175)
IT Novelty × Market Dynamism				-.034**		**-.033**
				(.017)		**(.017)**
IT Novelty × Competitive Dynamism					-.024**	**-.021**
					(.013)	**(.012)**
Firm Age	.003	.003	0	-.001	.001	-.001
	(.004)	(.004)	(.004)	(.004)	(.004)	(.004)
Firm Size	.082	.054	.082	.072	.149	.075
	(.106)	(.106)	(.119)	(.118)	(.127)	(.118)
Cashflow	0	0	0	0	0	0
	(.002)	(.002)	(.002)	(.002)	(.002)	(.002)
Firm Profitability	-.045***	-.04***	-.157**	-.165**	-.173**	-.169**
	(.011)	(.011)	(.085)	(.089)	(.086)	(.09)
Firm Performance	.798**	.769**	.935*	.946*	1.175**	.923*
	(.482)	(.465)	(.66)	(.66)	(.685)	(.654)
Performance Deviation	-.017*	-.016*	-.016*	-.019*	-.02*	-.017*
	(.011)	(.011)	(.012)	(.012)	(.012)	(.012)
Constant	-.952	-.659	-1.484*	-1.398*	-1.406*	-1.446*
	(.785)	(.786)	(.941)	(.922)	(.946)	(.929)
Observations	4062	4062	3205	3205	3205	3205
Groups	302	302	298	298	298	298
Wald Statistic Chi-square	26.23***	30.50***	14.85**	25.44***	15.69**	26.33***

Notes: (1) Random-effects models used for estimation. (2) Robust standard errors in parentheses. (3) Significance levels: *** p < 0.01, ** p < 0.05, * p < 0.10. (4) Coefficients in **bold** are associated with hypotheses being tested.

Table 3: Random-Effects Regression Models

The results of our main analysis are reported in Table 3. We use a hierarchical regression approach, wherein in Model (i), we enter only the control variables (Table 3, Model (i)). We then add the main effects of IT Novelty (Table 3, Model (ii)), followed by direct effects of market dynamism and competitive dynamism (Table 3, Model (iii)). Subsequently, we include the pair-wise direct and interaction effects of each dimension of industry dynamism with IT Novelty (Table 3, Model (iv) and Model (v)). Finally, we introduce the complete model with all the direct and two-way interaction terms included (Table 3, Model (vi)).

The results show that IT Novelty (Model (vi): $\beta_{IT\ Novelty}$ = 0.01, p<0.01) has a positive and significant coefficient, supporting H1. We also find support for H2a and H2b as the coefficients of two-way interaction

terms of IT Novelty × Market Dynamism (Model (vi): $\beta_{\text{IT Novelty x Market Dynamism}}$ = -0.033, p<0.05) and IT Novelty × Competitive Dynamism (Model (v): $\beta_{\text{IT Novelty x Competitive Dynamism}}$ = -0.021, p<0.05) are negative and significant. We also find support for H3 since the absolute value of the coefficient of the interaction of IT Novelty with Market Dynamism is higher than that of interaction with Competitive Dynamism (Model (vi): $|\beta_{\text{IT Novelty x Market Dynamism}}|$ = 0.033 > | $\beta_{\text{IT Novelty x Competitive Dynamism}}$ |= 0.021). To ensure consistency of the comparative effect size of the two moderators, we performed a standardized regression and found further support for H3 ($|\beta^{\text{std}}_{\text{IT Novelty x Market Dynamism}}|$ = 0.004 > | $\beta^{\text{std}}_{\text{IT Novelty x Competitive Dynamism}}$ |= 0.001).

Robustness Analyses

Dependent Variable: Strategic Conformity	(i) Controls	(ii) Direct Effects	(iii) Direct Effects	(iv) Interaction Effects	(v) Interaction Effects	(vi) Interaction Effects
IT Novelty		.002***	.002***	.006***	.002***	**.006*****
		(0)	(.001)	(.001)	(.001)	**(.001)**
Market Dynamism			3.817***	4.906***		4.72***
			(.753)	(.742)		(.749)
Competitive Dynamism			1.164***		1.489***	1.444***
			(.457)		(.413)	(.456)
IT Novelty × Market Dynamism				-.023***		**-.022***
				(.007)		**(.007)**
IT Novelty × Competitive Dynamism					-.007**	**-.008***
					(.003)	**(.004)**
Firm Age	0	.001	.001	-.002**	.001	0
	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)
Firm Size	.116***	.1***	.208***	.212***	.289***	.21***
	(.021)	(.022)	(.038)	(.036)	(.037)	(.037)
Cashflow	0	0	-.002**	-.001*	-.002**	-.002*
	(0)	(.001)	(.001)	(.001)	(.001)	(.001)
Firm Profitability	-.01	-.006	-.109	-.117	-.114	-.115
	(.021)	(.021)	(.109)	(.108)	(.109)	(.11)
Firm Performance	-.175	-.158	.036	.04	.146	.07
	(.145)	(.149)	(.282)	(.276)	(.288)	(.284)
Performance Deviation	-.018***	-.018***	-.022***	-.023***	-.024***	-.023***
	(.004)	(.004)	(.005)	(.005)	(.005)	(.005)
Constant	-.946***	-.805***	-2.436***	-2.461***	-2.483***	-2.537***
	(.171)	(.174)	(.307)	(.297)	(.294)	(.3)
Observations	4062	4062	3194	3194	3194	3194
Groups	302	302	287	287	287	287
Wald Statistic Chi-square	57.73***	107.06***	156.20***	219.69***	196.18***	201.81***
Notes: (1) Generalized Least Squared (GLS) models used with panel specific autocorrelation for estimation. (2) Significance levels: *** p < 0.01, ** p < 0.05, * p < 0.10. (3) Coefficients in **bold** are associated with hypotheses being tested.						

Table 4: Generalized Least Squares Regressions

We conduct supplementary analyses to assess the robustness of our results. First, strategic conformity may be plagued by panel-specific autocorrelation (PSAR1) and panel-specific heteroskedasticity as both may differ in magnitude across firms. To address this, we estimate Generalized Least Square (GLS) models with appropriate corrections for panel-specific autocorrelation and heteroskedasticity, to obtain a consistent and efficient estimator of the coefficients. The GLS model estimates, reported in Table 4, give us qualitatively similar results as the random-effects models.

Second, we conduct robustness analysis to account for endogeneity and reverse causality, emphasizing three key issues. First, strategic conformity in the prior year may influence strategic conformity in the

current year, implying a dynamic effect. Second, unobserved characteristics may confound the relationships. In other words, endogeneity may exist across IT Novelty, strategic conformity, and other firm-level variables. Third, reverse causality may occur if firms that are strategically conformant to industry standards also tend to pursue novelty in IT.

To account for such concerns, we use Arellano-Bond dynamic panel model (Arellano & Bond, 1991) which is a Generalized Method of Moments (GMM) estimator that has been extensively used in prior research since it can address issues of dynamic endogeneity, unobserved heterogeneity, and simultaneity (e.g., Saldanha et al., 2022; Saldanha et al., 2020). We also estimate the system GMM estimator, derived by Arellano and Bover (Arellano & Bover, 1995) and improved by Blundell and Bond (Blundell & Bond, 1998), for additional robustness. We fail to reject the null in Hansen-tests of instrument validity (p>0.1), indicating that the instruments used in the analysis are appropriate. Further, in all the GMM models, Arellano and Bond tests for AR(2) correlation did not reject the null (p>0.1) of no second-order autocorrelation in first-differenced errors, thereby satisfying the AR(2) test for GMM models. The results, omitted for brevity, are qualitatively retained. In each specification, we find support for our hypotheses using standard errors with the Windmeijer-correction (Windmeijer, 2005). The substantively unchanged results across our sensitivity analyses suggest that the results are robust to variations in instrument sets and lags used.

Discussion

Findings

This study presents three main findings. Firstly, we observe a positive and significant unconditional impact of IT Novelty on Strategic Conformity. Second, we find that market dynamism and competitive dynamism negatively moderate the influence of IT Novelty on strategic conformity. These results suggest that firms that have greater IT Novelty and operate in highly dynamic industries adopt a relatively distinctive strategy. Third, we observe that the moderating impact of market dynamism on the effect of IT Novelty on strategic conformity is more pronounced in than that of competitive dynamism. Our results are robust to various statistical concerns, such as heteroskedasticity, autocorrelation, and endogeneity, as demonstrated in our robustness analysis. Overall, these results underscore the importance of IT novelty in influencing strategic conformity. Our findings also offer insights into how firms can effectively leverage the dynamic nature of industries to achieve optimal strategic distinctiveness by pursuing IT Novelty.

Limitations

While this investigation has shed new light on the complex interplay between IT Novelty, industry dynamism, and strategic conformity, it is crucial to acknowledge the limitations that require further consideration. First, the study's dataset draws from 17 industries exclusively within the manufacturing sector. Although it represents a wide range of economic activity in the United States, to evaluate the generalizability of our findings, it is necessary to replicate the model across other industries – particularly those in the services sector – and other countries (e.g., Andrade et al., 2020; Kathuria et al., 2018; Khuntia et al., 2019; Mann et al., 2016). Second, while our measures of industry dynamism account for volatility within and between industries based on sales heterogeneity, future research may benefit from examining other aspects of the environment. Third, our measure of strategic conformity accounts for strategy-level decision-making at the firm level. However, the operational decision-making attached to these strategy decisions are not captured in this study. Future research could extend this analysis and explore the "operational conformity" of firms in this and other intriguing contexts, such as GREAT contexts ((Karhade & Kathuria, 2020; Karhade, Kathuria, Dasgupta, et al., 2020; Karhade, Kathuria, Malik, et al., 2020).

Theoretical and Practical Contributions

This study provides insights into the impact of IT novelty on firm strategic conformity and the influence of environmental factors on this relationship. Prior literature on IT business value has primarily focused on the interplay between IT and firm performance or the strategic focus of a firm in shaping its IT capabilities (e.g., Mithas et al., 2013; Saldanha et al., 2020). There is a paucity of research that examines the impact of IT Novelty on a firm's strategic conformity. Our study fills this research gap and contributes to the literature by highlighting the role of IT in shaping a firm's strategic conformity. Specifically, we demonstrate that IT

novelty can facilitate changes in a firm's strategic conformity. Further, we extend the literature by examining the moderating effect of environmental factors on the relationship between IT Novelty and firm strategic conformity. Our findings suggest that IT Novelty aids firms in establishing differentiation from their industry peers under conditions of environmental turbulence by achieving optimal distinctiveness — deviating from industry norms without compromising their legitimacy. Consequently, environmental factors emerge as a critical moderator of the impact of IT on firm strategy.

The theoretical and practical implications of our findings are noteworthy. From a theoretical perspective, our study advances the understanding of the IT-business value relationship by highlighting the role of IT in shaping a firm's strategic conformity. Additionally, our study expands the literature by exploring the moderating role of environmental factors in this relationship. Finally, we combine the institutional and resource-based view perspectives to examine the role of IT Novelty in shaping strategic conformity.

From a practical perspective, our study provides insights for firms seeking to utilize IT to adapt to industry dynamism in a manner that aligns with the nature of the dynamism. Specifically, companies operating in industries with dynamic markets may utilize IT Novelty to attain optimal distinctiveness. In contrast, firms in competitive industries must exercise caution when leveraging IT Novelty to achieve optimal distinctiveness, as they face greater normative pressures to conform to industry norms relative to industries that face high market dynamism. Our findings are particularly important as novel technologies such as artificial intelligence, Internet of Things, begin to pervade the digital landscape. Our findings suggest that IT Novelty can be a powerful tool for firms seeking to improve their strategic conformity. Therefore, managers should carefully consider the role of IT in shaping their firm's strategy while being mindful of the environmental factors that may influence this relationship.

Acknowledgements

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