

# Temporary Competitive Advantage: A State-of-the-Art Literature Review and Research Directions

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**In many industries, the traditional sources of competitive advantage tend to evaporate fairly rapidly. Therefore, managers need to continually rethink and reformulate their firm strategies. Likewise, scholars have felt compelled to shift the traditional centre of attention from competitive advantage that is sustainable over time to a focus on how firms compete by achieving a series of temporary advantages. However, the proliferation of research on temporary competitive advantage, far from building a solid body of literature, has produced a series of fragmented studies. This condition calls for detecting the state of knowledge in this realm of strategic inquiry. By leveraging the present status of the literature on temporary competitive advantage, we offer a conceptual map of the current inquiry of the antecedents, management, and consequences of temporary competitive advantage. Then, we identify the key implications for strategy theory and discuss the major challenges for cultivating fertile territories in this intriguing area of research.**

## Introduction

In the last decade, the ability to break away from existing rules of the game has become increasingly important to generate innovation and achieve success in several industries (Thomas and D'Aveni 2009).

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Andrevski and Ferrier (2019) observed a high frequency of new product introduction, fast processes of technological innovation, and increasing strategic actions characterizing computer-aided software engineering, personal computer, and semiconductor industries. Giachetti and Marchi (2017) highlighted the speed of competitive countermoves through innovation as a crucial aptitude for firms' survival in the global mobile phone industry. Williamson (2016) acknowledged a dynamism in many Chinese industries, with many customers interested to try new products and showing limited brand loyalty.

Since the firm's competitive environment has become more global, uncertain, and aggressive, the explanatory power of the traditional sources of competitive advantage (CA) has turned inconsistent in explaining how firms sustain CA (D'Aveni 1994; D'Aveni *et al.* 2010). Thus, strategic management inquiry has tended to shift focus from traditional sources of CA (Sirmon *et al.* 2010).

While some studies have rejected the existence of temporary competitive advantage (TCA) in various industries (McNamara *et al.* 2003; Vaaler and McNamara 2010) and/or argued for the persistence of firm-specific returns (Geroski and Jacquemin 1988; Ghemawat 1991; Waring 1996), TCA has received increasing attention (D'Aveni *et al.* 2010; McGrath 2013; Selsky *et al.* 2007). This proliferation of intellectual attention suggests that TCA has turned into an emerging research area in strategic management.

The contribution of TCA literature to strategic management inquiry has generally been fragmented, focusing on specific aspects, such as some antecedents of TCA, how to manage resources and actions to achieve TCA, and the main consequences of TCA. Thus, current TCA literature lacks a comprehensive appreciation of the key issues. Actually, there is 'confusion about how contemporary changes link together and the lack of a systematic [view] of the performance consequences of this kind of change' (Whittington *et al.* 1999, p. 530).

The proliferation of studies on TCA, combined with the fragmented research on the issue in strategic management, yields a call for framing out a comprehensive understanding of the state-of-the-art of TCA. Actually, discussing past accomplishments of the TCA literature is helpful to extract a set of implications relevant for structuring a research agenda.

## From sustainable to temporary competitive advantage

Strategic management as a field of study was created to probe into the factors underlying firm success (Furrer *et al.* 2008). Previous studies gave attention to *Chamberlinian* rents grounded in the structure–conduct–performance (SCP) paradigm (Porter 1981), *Ricardian* rents of the resource-based view (RBV) of the firm (Barney 1991; Peteraf 1993), and *Schumpeterian* rents of the dynamic capabilities (DCs) perspective (Blyler and Coff 2003; Danneels 2012; Galunic and Rodan 1998; Teece 2007). Based on SCP and the RBV, strategic management inquiry offers two core explanations of the sources of CA: (a) the external context and firm positioning; (b) the possession of or access to VRIO (value, rarity, imitability, and organization) resources to capture value (Lockett *et al.* 2009; Spanos and Lioukas 2001). Interestingly, SCP and the RBV share two assumptions. First, both adopt 'the implicit view that the origins of CA lie in the unusual foresight or ability of the

firm's managers' (Cockburn *et al.* 2000, p. 1124). Effective and timely access to industries or/and the orchestration of resources, allowing the exploitation of opportunities, reflect how executives interpret internal and external environmental forces (Cockburn *et al.* 2000). Second, both emphasize that CA may be sustainable and have the possibility to generate long-lasting competitive rents (Rumelt 1991). Sustainability of CA is linked to entry barrier height in the industry (Reed and DeFilippi 1990) and rare and unique resources inimitability (Barney 1991).

While SCP and the RBV pinpoint the importance of achieving a sustainable competitive advantage (SCA), the intrusion of hypercompetition (D'Aveni 1994; Thomas III 1996) teaches us that, far from being beneficial, traditional strategy approaches may take a *negative* value in rapidly changing contexts (Slater 1993). Consequently, scholars have labelled these contexts 'disruptive' (Christensen 2001), thereby stressing that strategy can also have a 'creative destruction' effect on rivals' advantage (D'Aveni *et al.* 2010; Pacheco-de-Almeida 2010). Actually, the traditional sources of CA tend to evaporate incredibly fast, as occurs in long-term equilibria of perfect competition (Aupperle 1996; Bogner and Barr 2000; Weber and Tarba 2014).

Recently, the accelerated competitive intensity in several industries has turned each of the traditional sources of CA more vulnerable and weaker than earlier. Because of the quickened pace of advantage erosion, the decision to sustain CAs, rather than rethinking the current ones, reveals a strategic move that has an effect opposite to the one expected, as it prevents firms from developing new advantages (D'Aveni 1994). If competitors see a situation of complacency, they will likely attack the complacent firm. Competitors indeed interpret complacency as a favourable circumstance for disrupting the market status quo, or even as an indicator of firm weakness (D'Aveni 1994).

Since the traditional sources of advantage have repeatedly fallen short of realizing competitive success, they are shown to be insufficient for competing effectively in rapidly changing environments. The solution scholars advanced to solve this problem is to subvert the status quo by seizing and creating opportunities and initiatives through the generation of a series of TCAs (D'Aveni *et al.* 2010) by means of designing and implementing a string of competitive moves (Baum and Korn 1999; Chen and Miller 2012, 2015; Chen *et al.* 2007; Connelly *et al.* 2017) that are frequently aggressive (Ferrier *et al.* 1999).

Accordingly, a good definition of TCA relates to advantageous erosion that ‘occurs routinely as a result of dynamic and interactive rivalry’ (Sirmon *et al.* 2010, p. 1386). Then, the characteristic trait of TCA vis-à-vis SCA is a function of time or ‘the pace of erosion, or regression to the mean, of abnormal returns’ (Pacheco-de-Almeida 2010, p. 1502). TCA is ‘characterized by faster convergence of firm profits to the industry mean’ vis-à-vis SCA (Pacheco-de-Almeida 2010, p. 1502). Arguably, ‘the pace of regression to the mean of abnormal returns is set by the intensity of rivals’ (1) innovation and (2) imitation in the industry’ (Pacheco-de-Almeida 2010, p. 1502).

## Detecting the literature on temporary advantage

Following recent studies published in the *International Journal of Management Reviews* (e.g. Agostini and Nosella 2017), we describe our research strategy to broaden the degree of reliability and replicability of this inquiry. We organized our search of articles into five sequential phases and performed the bibliographic analysis on 31 December 2018.

**Phase 1.** We started our search by focusing on the main core of TCA literature, which we find positioned essentially along two key journal special issues on the topic:

1. The *Organization Science* special issue on ‘New Organizational Forms and Strategies for Managing in Hypercompetitive Environments’ (Ilinitch *et al.* 1996). This special issue, published in two numbers, has the merit of promoting strategic flexibility (Smith and Zeithaml 1996) and the combination of knowledge, resources, and capabilities as imperatives for competing in the hypercompetitive arena (Grant 1996b).
2. The *Strategic Management Journal* special issue entitled ‘The Age of Temporary Advantage’ (D’Aveni *et al.* 2010).

Given the scope of the two special issues, we believe that the core of TCA literature is largely traceable in the articles published in the two special issues. Moreover, the articles contained therein lead us to appreciate TCA research across strategy and organizational communities. Consequently, we consider the 24 articles published in the two special issues as the basis for our search.

**Phase 2.** We extended our search by collecting articles citing the 24 articles in the two special issues, as reported by Google Scholar. This initial search produced 4122 articles, thereby confirming that TCA studies have experienced a rapid increase in the two decades spanning from January 1996 to December 2018. Then, similarly to Dagnino *et al.* (2015), we restricted the sample by considering the 1351 articles published in ‘management’ journals with a 5-year impact factor greater than 3 in 2016.

**Phase 3.** We enriched our sample of articles by searching for studies that advanced TCA research, regardless of the impact factor of the journals in which they were published. Accordingly, we searched for studies that were not considered in Phase 2 because they had been published in management journals that lie below the impact factor cut-off adopted. Specifically, for all the years available, we searched in the Scopus database for the keywords ‘hyper-competition’, ‘temporary advantage’, and ‘temporary competitive advantage’. We limited the results to articles in English in the subject area ‘business’. This search yielded 105 articles. We further refined the sample to articles that have received at least the top 10% of citations (i.e. nine additional articles).

**Phase 4.** We merged the results of Phase 2 and 3 to the initial 24 articles resulting from Phase 1. On the one hand, the selection performed in Phase 3 ensures that articles that were not published in the most prestigious journals were considered when they offered a significant contribution to TCA. On the other hand, the selection performed in Phase 2 ensures that recent articles published in top journals were also considered, though they had not yet received enough citations. At the end of Phase 4, our search yielded 1360 articles.

**Phase 5.** The abstracts of the 1360 articles were independently read by at least two of the authors of this paper. Then, moving from the definition of TCA provided in the previous section, we refined the results by excluding 964 articles that did not directly provide a contribution to TCA research. We included articles that at least two of the authors of this article recognized as providing a specific contribution to TCA. Some articles selected in Phases 2 and 3 make sparse reference to the special issues we consider, or present only ceremonial citations. For instance, D’Aveni *et al.* (2010) is frequently used merely to emphasize market dynamism.

Additionally, we ruled out articles focusing on the following:

- *Dynamics of multimarket competition*. Since ‘multimarket competition increases the opportunity that rivals have to compete with each other, the greater market overlap may not translate into higher intensity of competition’ (Jayachandran *et al.* 1999, p. 50). Although extremely relevant *per se*, this literature section seems marginal in shaping the body of TCA research.
- *Entrepreneurship*. While this stream of studies mainly explores the basic conditions of seeing and discovering opportunities, these articles revolve around ‘the form of competitive strategy, benchmarking, learning to consistently outperform competitors, strategic position and so forth’ (Ireland *et al.* 2003, p. 965).

At the end of this selection process, we conducted our analysis on a final sample of 292 articles on TCA. In our understanding, this represents a satisfactory basis for performing a parsimonious but concurrently far-reaching review of the literature. Given the proliferation of studies on TCA in a variety of journals (see Table 1), combined with the fragmented status of the literature, a comprehensive understanding of the state-of-the-art of TCA turns helpful in strategic management.

To facilitate the appreciation of the key issues in TCA literature, this study is based on the authors’ coding of the selected articles: authors, journal, conceptual perspectives, sample, and key insights. Through extensive and in-depth discussions among the authors, no relevant conflict in the interpretation of the findings emerged.

## Conceptual map of TCA literature

From the in-depth analysis of the body of published work, we developed a conceptual map of the TCA literature, reported in Figure 1. Drawing on D’Aveni *et al.* (2010, p. 1372), we argue that ‘the analysis of temporary advantage can be partitioned into three main constituent parts: (1) causes or antecedents of temporary advantages, (2) the management of temporary advantages and (3) consequences of temporary advantage’. However, while some sub-constituents reported in the map of D’Aveni *et al.* (2010) are not yet fully explored in the extant literature (e.g. inter-industry convergence as an antecedent

of TCA), other sub-constituents, even if not included in the original map, have received notable attention. Our review generally corroborates the framework of D’Aveni *et al.* (2010). However, we estimated the frequency with which single sub-constituents appear in the TCA literature, and only the sub-constituents with the highest usage in the literature are discussed in our review.

As mentioned, the identification of antecedents, management, and consequences of TCA based on selected literature is relatively straightforward. However, sometimes the conceptual roots or recent evolutions of specific antecedents, management, and consequences of TCA are not contained in our database. From Rothaermel and Alexandre (2009), we recognize ambidexterity as a constituent of the management of TCA. Nonetheless, we acknowledge that not all the important references helpful to understand the role of ambidexterity in achieving TCA are included in our database (O’Reilly and Tushman 2008; Tushman and O’Reilly 1996), since our article selection is focused not on ambidexterity but on TCA. We also included a few fundamental contributions to TCA that did not appear in the original database.

Table 2 reports the main references for each piece (antecedents, management, and consequences) of our map.

## Antecedents of temporary advantage

As Richard D’Aveni suggested, in many industries, ‘rivals must take both the strategies of their competitors and possible performance-altering changes in the environment into account’ (Ross and Sharapov 2015, p. 677). This insight is rooted in the Austrian school of economics (Jacobson 1992; Kirzner 1973, 1979; Young *et al.* 1996), which locates the drivers of innovation processes in contextual uncertainty and market disequilibria. Hence, the literature analysed has identified a set of four significant environmental grounds underlying the creation and erosion of CA: (i) globalization process; (ii) demand uncertainty; (iii) technological uncertainty; and (iv) industry competitive intensity. While all such antecedents play an important role in uncovering the sources of CA, the pace of TCA is related to how such antecedents vary across industries. The evolution varies from one industry to another because of the interactions among the four TCA antecedents. Such interactions shape the intensity of firm innovation and imitation (Pacheco-de-Almeida 2010).

Table 1. List of journals used in the systematic review of TCA, number of articles per journal, and ISI 5-year impact factor in 2016

Journal	Total count	5-Year impact factor 2016
<i>Strategic Management Journal</i>	60	6.652
<i>Organization Science</i>	35	6.145
<i>Academy of Management Journal</i>	18	11.901
<i>Journal of Management</i>	16	12.213
<i>Journal of Product Innovation Management</i>	10	4.358
<i>Long Range Planning</i>	10	6.297
<i>Journal of Management Studies</i>	9	7.236
<i>Research Policy</i>	8	6.265
<i>Strategic Entrepreneurship Journal</i>	8	3.485
<i>Information Systems Research</i>	7	4.791
<i>Journal of International Business Studies</i>	7	7.433
<i>Technovation</i>	7	4.822
<i>Academy of Management Perspectives</i>	6	7.156
<i>Academy of Management Review</i>	6	13.630
<i>Industrial Marketing Management</i>	6	4.402
<i>International Journal of Management Reviews</i>	6	7.731
<i>Strategic Organization</i>	6	3.727
<i>British Journal of Management</i>	5	3.754
<i>Leadership Quarterly</i>	5	4.269
<i>Academy of Management Annals</i>	4	16.191
<i>California Management Review</i>	4	3.412
<i>Harvard Business Review</i>	4	4.427
<i>Journal of Operations Management</i>	4	8.618
<i>Management Science</i>	3	4.131
<i>MIS Quarterly</i>	3	12.222
<i>Administrative Science Quarterly</i>	2	6.913
<i>International Journal of Operations &amp; Production Management</i>	2	4.211
<i>International Journal of Technology Management</i>	2	1.106*
<i>International Small Business Journal</i>	2	4.651
<i>Journal of Business Research</i>	2	4.108
<i>Journal of Knowledge Management</i>	2	3.293
<i>Management Decision</i>	2	2.515*
<i>Business Horizons</i>	1	3.329
<i>European Management Journal</i>	1	2.608*
<i>Global Strategy Journal</i>	1	5.674
<i>Human Relations</i>	1	4.027
<i>Human Resource Management</i>	1	3.055
<i>Information &amp; Management</i>	1	4.283
<i>International Journal of Logistics Research and Applications</i>	1	n.a.
<i>International Journal of Project Management</i>	1	4.383
<i>International Marketing Review</i>	1	n.a.
<i>Journal of Economic Behavior and Organization</i>	1	1.732*
<i>Journal of Organizational Behavior</i>	1	5.196
<i>Journal of Management Information Systems</i>	1	3.910
<i>Journal of Small Business Management</i>	1	4.342
<i>Managerial and Decision Economics</i>	1	n.a.
<i>MIT Sloan Management Review</i>	1	4.225
<i>Organization Studies</i>	1	4.771
<i>Personnel Psychology</i>	1	8.176
<i>Research in Organizational Behavior</i>	1	4.043
<i>Scandinavian Journal of Management</i>	1	2.054*
<i>Science and Engineering Ethics</i>	1	n.a.
<i>Strategic Direction</i>	1	n.a.
<b>Total</b>	<b>292</b>	

\* Journals considered in Phase 3.

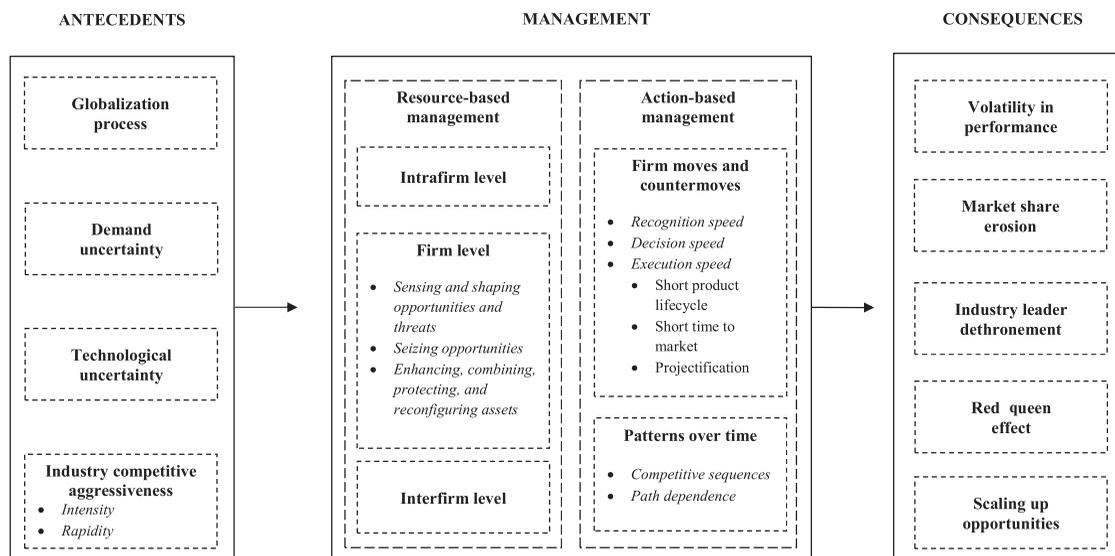


Figure 1. Conceptual map of temporary competitive advantage literature

Accordingly, the effectiveness of certain activities (e.g. knowledge and organizational search) and the unsustainability of CA depend on the pace of change in the firms' external environment (McIver *et al.* 2013; Ndofor and Levitas 2004).

### Globalization process

The first antecedent of TCA is the ongoing globalization process (i.e. 'the increase in the interdependence and integration across economies and countries'; Cuervo-Cazurra *et al.* 2017, p. 155). This condition is accelerated by technological developments (e.g. the diffusion of the World Wide Web; Kotha *et al.* 2001) and institutional changes, such as the negotiation of regional (or larger) free trade agreements (e.g. World Trade Organization).

Although the costs associated with the 'liability of foreignness' in industry continue to be relevant (Nachum 2014; Zaheer 1995) and governments attempt to inhibit the interconnections among economies (e.g. by increasing customs duties), the globalization process is reducing cultural, administrative, geographic, and economic distances among countries (Ghemawat 2001). Firms may more easily penetrate new country markets and/or relocate their production activities abroad. Thus, the globalization process is breaking down the importance of localization advantages, thereby eliminating a relevant source of CA sustainability.

The globalization process opens up new country market opportunities for domestic firms as well as for firms from other countries that will be able to expand rapidly in a given country market (Lahiri *et al.* 2008). As such, the globalization process fosters the level of single country-market contestability and 'increases incentives for innovation and improved opportunities to earn returns on innovation because of the expanded marketplace' (Hitt *et al.* 1998, p. 24). Therefore, some studies consider the possibility of imitation as a key driver discouraging the decision to enter a new country (Delios *et al.* 2008). The globalization process represents an antecedent of TCA because it is likely that competition in a single country market will increase the intensity of firm innovation and imitation cycle (Harvey and Griffith 2007; Pacheco-de-Almeida 2010). This phenomenon involves both developed and emerging countries. Multinational firms compete to conquer emerging markets that represent the 'largest and fastest-growing segment of the world's population' (London and Hart 2004, p. 350).

### Demand uncertainty

The second antecedent of TCA is demand uncertainty. When a firm has to cope with consumer preferences, it faces demand uncertainty. Since demand uncertainty varies by product markets, each business has to cope with customers' preferences, which might change rapidly over time (Roberts and Grover 2012; Tripsas 2008).

Table 2. List of representative articles on the antecedents, management, and consequences of temporary competitive advantage

Topic	Representative articles
Antecedents of TCA	<p><b>Globalization process</b> Coviello (2015), Delios <i>et al.</i> (2008), Ghemawat (2001), Harvey and Griffith (2007), Kotha <i>et al.</i> (2001)</p> <p><b>Demand uncertainty</b> Roberts and Grover (2012), Yayavaram and Chen (2015)</p> <p><b>Technological uncertainty</b> Chintakananda and McIntire (2014), Giachetti and Marchi (2017), Johnson <i>et al.</i> (2012), Karim <i>et al.</i> (2016), Tushman and Anderson (1986), Wu <i>et al.</i> (2014)</p> <p><b>Industry competitive aggressiveness</b> Ajamieh <i>et al.</i> (2016), Nadkarni <i>et al.</i> (2016)</p>
Management of TCA	<p><b>Resource-based management of TCA</b></p> <p><b>Intrafirm level</b> Alexiev <i>et al.</i> (2010), Bendig <i>et al.</i> (2018), Chen <i>et al.</i> (2010b), Chirico <i>et al.</i> (2011), Hoisl <i>et al.</i> (2017), Lin and Rababah (2014), Marcel <i>et al.</i> (2011), Reina <i>et al.</i> (2014)</p> <p><b>Firm level</b> Ben-Oz and Greve (2015), Chakravarty <i>et al.</i> (2013), Chen and Miller (2012), Danneels (2016), Lee <i>et al.</i> (2015), O'Reilly and Tushman (2011), Sirmon <i>et al.</i> (2007), Wang and Ahmed (2007)</p> <p><b>Interfirm level</b> Andreuski and Ferrier (2019), Baglieri <i>et al.</i> (2012), Beckman <i>et al.</i> (2004), Belderbos and Heijltjes (2005), Bengtsson and Johansson (2014), Grant and Baden-Fuller (2004)</p> <p><b>Firm moves and countermoves</b> Ayyagari <i>et al.</i> (2015), Bengtsson and Johansson (2014), Boyd and Bresser (2008), Chen and MacMillan (1992), Dykes <i>et al.</i> (2018), Giachetti and Dagnino (2014), Giachetti and Lanzolla (2016), Giachetti <i>et al.</i> (2017), Hopkins (2003), Jha and Lampel (2014), Klarner and Raisch (2013), Luoma <i>et al.</i> (2017)</p> <p><b>Patterns over time</b> Chen <i>et al.</i> (2010a), Gnyawali and Madhavan (2001), Nerkar (2003), Rockart and Dutt (2015)</p>
	<p><b>Action-based management of TCA</b></p>
Consequences of TCA	<p><b>Volatility in performance</b> Mackelprang <i>et al.</i> (2015), Zhang and Gimeno (2016)</p> <p><b>Market share erosion</b> Hughes-Morgan and Ferrier (2017), Nault and Vandenbosch (1996)</p> <p><b>Industry leader dethronement</b> Ferrier <i>et al.</i> (1999), Lieberman and Asaba (2006), Ross and Sharapov (2015), Smith <i>et al.</i> (2001)</p> <p><b>Red queen effect</b> Derfus <i>et al.</i> (2008), Giachetti <i>et al.</i> (2017)</p> <p><b>Scaling up opportunities</b> Clarysse <i>et al.</i> (2011), Josefy <i>et al.</i> (2015), Larrañeta <i>et al.</i> (2014)</p>

Because demand uncertainty reduces the firm's aptitude to identify and react to customers' preference changes, it lessens brand loyalty and amplifies the perception of competitive vulnerability (Robertson and Gatignon 1986; Roca *et al.* 2017; Tanriverdi *et al.* 2010; Yayavaram and Chen 2015). However,

uncertainty (and the willingness to bear it) also involves opportunities for the firm to make financial and organizational investments (Fleming 2001; Hitt *et al.* 2011).

When demand uncertainty is relatively high, it is unlikely that firms realize superior performance over

time, since changes in consumer preferences make it impossible to seize scale economies. Then, demand uncertainty plays the role of a key contingency that shapes the new ventures' potential gains (Larrañeta *et al.* 2014), as well as established firms' performance (Foss and Lyngsie 2014).

According to the TCA literature, an implication resulting from demand uncertainty is time-based competition activated by launching new products and technologies (Barroso and Giarratana 2013; Bordley and Karnani 2018; McCann and Bahl 2017). Demand uncertainty has implications for the formation of new CAs characterized by a temporal force, termed *time compression diseconomies* (Pacheco-de-Almeida 2010). Demand uncertainty leads to costs related to the reduction of returns and the degree of project complexity. Remarkably, 'reducing project duration often raises costs, and more severe compressions are purchased at increasingly higher costs' (Pacheco-de-Almeida 2010, p. 1501).

### *Technological uncertainty*

The third antecedent of TCA is technological uncertainty. Technological uncertainty mainly relates to the rate of technological change (Johnson *et al.* 2012), as it involves the creation of opportunities that occurs at a relatively fast pace (Karim *et al.* 2016). When firms face technological uncertainty, their strategy results in actions designed to win profit or accrue value in turbulent environment settings (Johnson *et al.* 2012).

The rapid downfall of CAs brought about by competitive pressure requires industry leaders to activate a sequence of short-term gains to sustain superior performance (D'Aveni 1994). By exploring how radical technological change makes the CA (e.g. market share leadership) of established incumbents temporary, Tushman and Anderson (1986, p. 439) show that 'while competence-destroying discontinuities are initiated by new firms and are associated with increased environmental turbulence, competence-enhancing discontinuities are initiated by existing firms and are associated with decreased environmental turbulence'. Giachetti and Marchi (2017, p. 352) argue that 'the potential for leadership changes is greater for firms that are able to undertake "aggressive" competitive actions at the time when "significant" windows of opportunity are open'. Overall, the faster and more disruptive the technological pace, the greater the challenge for any firm that needs to cope with it (Suarez and Lanzolla 2005).

Sometimes it is difficult to recognize the type of uncertainty affecting TCA (i.e. whether TCA arises from the intricacy of predicting consumers' demand or instead from the technological changes tied to the adoption of a certain type of product; Chintakananda and McIntyre 2014). Wu *et al.* (2014) argue that any new technology is nothing more than the external manifestation of heterogeneity on the demand side of consumer preferences. Accordingly, new technologies constitute a reaction to demand uncertainty. Alternatively, we can argue that firms organize themselves to compress the timing of the decision-making process (Argouslidis *et al.* 2015), also thanks to the big data revolution (Pavlou and El Sawy 2006). Therefore, demand uncertainty is not due only to customers' conditions but also to shorter product lifecycles shaped by technologically driven, unpredictable advancements (Brown and Eisenhardt 1997).

### *Industry competitive aggressiveness*

The fourth antecedent of TCA is industry competitive aggressiveness, which specifies the extent to which firms experience attacks with high competitive intensity and rapidity from certain main industry rivals (Ajamieh *et al.* 2016). The *intensity* of competitive aggressiveness usually reflects the volume of moves and countermoves that firms within the industry carry out 'through [their] competitive repertoires (...) to proactively get ahead of rivals and to respond to rivals' actions' (Nadkarni *et al.* 2016, p. 1136). The *rapidity* of competitive aggressiveness regards the speed of moves and countermoves that firms within an industry make to challenge their rivals' moves.

There exists a relationship between industry rivalry, as defined in the SCP paradigm, and industry competitive aggressiveness. Ferrier (2001) argues that barriers to entry, industry concentration, and, on a smaller scale, industry growth amplify executives' proactivity to carry out a set of aggressive competitive moves and countermoves. However, the amount and speed of moves and countermoves also depend on firms' past performance (Ferrier 2001; Schimmer and Brauer 2012).

The sustainability of CA in industries characterized by highly competitive aggressiveness – in turn, linked with industry rivalry – is *continually* challenged because such firms face 'more serious pressure to adapt their course of action by exploiting new business opportunities than do firms that

experience low competitive aggressiveness' (Ajamieh *et al.* 2016, p. 4668).

## Management of temporary advantage

D'Aveni *et al.* (2010) propose two explicit ways to assess the management of TCA. The first one, labelled resource-based management of TCA, focuses on the relationships among the endowment of firm resources, firm slack, and TCA. The emphasis is on the 'imperfect competitive structures of the economic space' (Keyhani *et al.* 2015, p. 92). The second, labelled action-based management of TCA, connects actions (and responses) to firm TCA and performance. Here, the emphasis is on 'the movement of players through this space from disequilibrium to equilibrium and vice versa' (Keyhani *et al.* 2015, p. 92).

### *Resource-based management of TCA*

Conventionally, the RBV posits that the heterogeneity of resources and capabilities shapes firm performance (Andersén *et al.* 2016; Barney 1991; Peteraf 1993). Given the emphasis on innovation and imitation in the industry (Pacheco-de-Almeida 2010) in the TCA literature, other theoretical perspectives complemented the RBV by focusing on how firms can orchestrate resources and capabilities to recognize and exploit innovation opportunities. First, studies on *transcendent* leadership disentangle the CEO's contribution to resource configuration and opportunity recognition (Crossan *et al.* 2008; Eggers 2012; Korand Mesko 2013; Shepherd *et al.* 2017; Uhl-Bien *et al.* 2007), and the role of family members in taking actions to reconfigure resources (Duran *et al.* 2015). Similarly, Sirmon *et al.* (2008) call attention to the managerial role in making idiosyncratic bundling and deployment choices that boost how firms may exploit the advantage of a given set of resources. Second, DCs inquiry explains the heterogeneity of firms having the same initial endowment of resources with the possession of (or access to) DCs (Fainshmidt and Frazier 2017; Teece 2007). Finally, drawing on Barnard's (1938) idea of coalition formation and cooperative strategies, studies stress that resource orchestration does not necessarily occur at the firm level but involves the use of a web of interfirm relations (Hanssen-Bauer and Snow 1996; Liebeskind *et al.* 1996). Taken together, these perspectives epitomize the resource-based management of TCA.

Moving from the complementarities among these perspectives, management scholars recognize that, by only considering the single firm level, achieving CA turns into an extremely challenging and almost unfeasible endeavour (Rothaermel and Hess 2007). Extant studies give explicit attention to three levels of analysis: (a) the intrafirm level; (b) the firm level; and (c) the interfirm level.

*Resource-based management of TCA at the intrafirm level.* Existing research on the management of TCA 'indicates how critical a firm's sensory and analytical mechanisms are when it comes to making good decisions' (Lin and Rababah 2014, p. 954). Strategic leadership and the top management team (TMT) enable the firm to strategically pursue TCA (Schneider and Somers 2006; Wang *et al.* 2016) by stimulating innovation (Kelley 2009; Makri *et al.* 2006) and competitive actions (Marcel *et al.* 2011). The discussion of the central role strategic leadership and the TMT play in winning TCA covers four main features. First, Wang *et al.* (2014) argue that the strategic leadership's psychological attributes affect how executives make strategic choices. For instance, psychological attributes act through a filtering process of information that, in turn, affects the speed of the firm's decision-making process as a key aspect of achieving TCA (Lin and Rababah 2014; Reina *et al.* 2014). Bendig *et al.* (2018) showed that the CEO's core self-evaluation moulds the formation of the firm's knowledge-based capital at three levels: human, social, and organizational.

Second, Wang *et al.* (2014) extend their attention to the socio-psychological processes of interaction among members of the TMT. They focus on TMT-based socio-psychological processes that make a firm more adaptable by improving its strategic flexibility. Andreovski *et al.* (2014) acknowledge 'managerial racial diversity' as a strategic aptitude that allows the firm to realize superior operating profits by generating TCAs. Chirico and Bau (2014, p. 2015) find that 'environmental dynamism increases family [TMTs'] awareness of the need to display entrepreneurial behaviour to sustain the family firm competitiveness'.

Third, Chen *et al.* (2010b) recognize the role of TMT socio-behavioural integration, suggesting that only a dynamic and cohesive team can launch decisive and swift actions against rivals. Since CA is temporary, cohesive teams turn out to be requisite in uncertain environments. Hoisl *et al.* (2017) focus on team diversity in a task-related experience. The impact of team diversity on task-related

experience is different in a hypercompetitive context vis-à-vis more stable environments because the need to use fast communication requires a common base of knowledge that facilitates coordination (Deng et al. 2008; Hoisl et al. 2017). Alexiev et al. (2010) recognize that, amalgamating multiple perspectives, TMT heterogeneity is a key factor in seeking radical innovation.

Finally, drawing on family firms and family members' leadership literature, a key role is acknowledged for generational involvement and a participative strategy in mobilizing the vision to exploit and combine diverse knowledge and resources (Chirico et al. 2011).

*Resource-based management of TCA at the firm level.* The TCA management literature increasingly calls for developing dynamic approaches to orchestrate resources (Carnes et al. 2017; Sirmon et al. 2011), manage trade-off efficiency/flexibility (Adler et al. 1999), and achieve CA (Chen and Miller 2012; Su et al. 2014; Wang and Ahmed 2007). Resource orchestration 'is the comprehensive process of structuring the firm's resource portfolio, bundling the resources to build capabilities and leveraging those capabilities' (Sirmon et al. 2007, p. 273). Resource orchestration is at least partially sequential in nature (Sirmon et al. 2007). However, while possessing and leveraging resources is a compulsory condition for competing in both stable and hypercompetitive contexts (Zohar and Morgan 1996), in the TCA literature, a crucial role is played by *resource bundling* in building capabilities.

We emphasize resource bundling because the 'path-creating search that generates resource heterogeneity is a response to idiosyncratic situations faced by firms in their local searches' (Ahuja and Katila 2004, p. 887). Consequently, studies argue that DCs are a helpful means for firms to tackle technological and demand uncertainty (Fainshmidt et al. 2018; Girod and Whittington 2017).

DCs increase the effectiveness, marketing success, speed, and efficiency of firm responses (Barrales-Molina et al. 2014; Dykes et al. 2018; Hitt et al. 2011; Li et al. 2010; Rindova and Kotha 2001) and mediate the relationship between knowledge management practices and innovation (Alegre et al. 2013). Therefore, 'as the environment becomes more turbulent, firms may be more sensitive and cultivate higher level of DCs to cope with' (Li and Liu 2014, p. 2798).

After considering various notions of DCs (Wang and Ahmed 2007; Wilden et al. 2016), to assess the literature on resource-based management of TCA at the firm level we use the taxonomy proposed by Teece (2007). We consider three sets of DCs: '(1) capabilities to sense and shape opportunities and threats, (2) capabilities to seize opportunities, and (3) capabilities to maintain competitiveness' (Teece 2007, p. 1319).

The first set of DCs (*sensing and shaping opportunities and threats*) encompasses scanning, perceiving, searching, and exploring processes across markets and technologies (Wilden et al. 2013). It requires firms to preserve close relationships with customers, suppliers, and other actors (Xu et al. 2015) and to implement the best practices in the industry (Danneels 2016). Bharadwaj and Dong (2013) find that market learning activities and customer-oriented practices are helpful in sensing market change.

The second set of DCs (*seizing opportunities*) concerns the assessment of extant and developing capabilities and investments in technologies able to realize marketplace recognition (O'Reilly and Tushman 2008; Teece 2007; Wilden et al. 2013). Ben-Oz and Greve (2015) suggest that business owners and managers usually agree that, in various industries, changes occur very rapidly, and the most significant changes involve their technology base. As such, executives typically seek to increase their understanding to explore new knowledge from the view of customers, suppliers, and competitors (Jones and Mahon 2012; Ritala 2013) or through the establishment of interfirm relations of strategic value (Ben-Oz and Greve 2015).

The third set of DCs (*enhancing, combining, protecting, and reconfiguring assets*) involves the recombination of resources and operational capabilities, adapting them to firm growth, market, and technological changes (Bingham and Davis 2012; Danneels 2008; Galunic and Eisenhardt 2001; Wilden et al. 2013). To achieve a series of TCAs, firms enhance their intangible and tangible assets by searching beyond and outside their current existing knowledge body and capability base (even by integrating existing knowledge; Grant 1996a,b). We underscore the role of co-evolving firm absorptive capacity (Biedenbach and Müller 2012; Carlo et al. 2012; Lewin et al. 2011; Nagati and Rebolledo 2012; Zahra and George 2002), knowledge environment (Van Den Bosch et al. 1999), relational capital (Carmeli and Azeroual 2009), and the relevance of pre-entry experience (Bayus and Agarwal 2007).

As Katila *et al.* (2012) observe, under high uncertainty levels, the possibility that specific knowledge may become obsolete increases dramatically, in such a way that it will drive firms to exploit their common knowledge base rather than their specific knowledge base (Escribano *et al.* 2009). Clarysse *et al.* (2011) suggest that, in unstable competitive environments, firms must implement strategic decisions and combine their assets in the shortest possible time, thus having a limited time to gradually build a portfolio of resources and knowledge.

Finally, DCs related to the protection and re-configuration of knowledge lead to developing *organizational agility* (Chakravarty *et al.* 2013) (i.e. by leveraging information technology infrastructure; Lee *et al.* 2015; Lu and Ramamurthy 2011; Roberts and Grover 2012; Sambamurthy *et al.* 2003). All the antecedents of TCA powerfully motivate firms to develop their agility (Claycomb *et al.* 2005). Specifically, organizational agility takes a defensive form or a proactive form (Sharma *et al.* 2017). The former (i.e. *defensive* organizational agility or organizational flexibility) regards the firm's aptitude to respond in a timely manner to changes in customer preferences or in technological regimes. It is based on modular product and process architectures (Warren *et al.* 2002). The latter (i.e. *proactive* organizational agility) refers the firm's aptitude to anticipate (or become equipped to respond to) demand uncertainty or technological changes or rivals' competitive actions (Sharma *et al.* 2017).

We recognize two forms of proactive organizational agility. The first type makes the firm more durable, able to absorb environmental shocks and adapt to rapidly changing demand and technological conditions (Doz and Kosonen 2010; Oliver 2016). By being proactive and building more slack resources, firms are able to absorb environmental shocks. The second kind regards the ability to pre-empt demand and technological changes or competitive aggressive actions from local and global rivals. This type of agility is more flexible (Patel 2011; Sanchez 1995; Volberda 1996) and usable than the former. This condition grants greater operational effectiveness (Richardson 1996), thereby allowing firms to organize new business models to win advantages in rapidly changing conditions (Wirtz *et al.* 2007). As Stieglitz *et al.* (2016, p. 1854) posit, 'the challenge in frequently changing environments with fleeting opportunities is to identify and to focus on strategic actions'.

An intriguing path of studies focuses on the exploitation–exploration tensions for achieving *organizational ambidexterity* (Blindenbach-Driessen and Van den Ende 2014; O'Reilly and Tushman 2013; Raisch and Birkinshaw 2008). In TCA, sequential ambidexterity might be useless, and firms should simultaneously work in exploration and exploitation (Tushman and O'Reilly 1996). In other words, given the quick erosion of CA sources, firms need to challenge 'the widely held assumption that innovation and efficiency are orthogonal and trade-offs must always sacrifice one for the other' (O'Reilly and Tushman 2008, p. 185). To achieve this goal and escape the exploitation trap (Siren *et al.* 2012), strategic leaders play a crucial role (O'Reilly and Tushman 2011; O'Reilly *et al.* 2009). They should balance two competing forces: 'attending to the products and processes of the past, while also gazing forward, preparing for the innovations that will define the future' (O'Reilly and Tushman 2004, p. 74). However, Zimmermann *et al.* (2015) show that there is complementarity between the strategic leaders' role and an emergent circumstance in which executives are liable to embrace an organizational ambidextrous orientation.

Finally, concerning the resource-based management of TCA at the firm level (Peteraf and Bergen 2003), we call attention to competency traps (Sigelkow and Levinthal 2005) and the co-evolution of knowledge and capabilities (Helfat and Raubitschek 2000). Since the co-evolution of knowledge and capabilities allows firms to exploit potential synergies and has an impact on the firm's change attitude in a competitive setting, or guides the change of competitive settings (Bond and Houston 2003), the co-evolution of knowledge and capabilities may lead to strategic myopia. Therefore, an effective strategy process should simultaneously stimulate aspirations to make decisions and ensure multiple inspirations in strategy discussions (Andersen and Minbaeva 2013). This complements Li and Liu's (2014) work, according to which the antecedents of TCA motivate firms to develop capabilities to cope with them. Besides external forces, we call attention to the co-evolution between internal organizational forces and TCA antecedents.

*Resource-based management of TCA at the interfirm level.* Several authors started to explore the emergence of TCA not only within firms (Andrevski *et al.* 2016), but also inside the *web* of cooperative relationships that firms continuously activate (Lahiri *et al.* 2008) (i.e. interfirm relationships; Andrevski *et al.*

2016; Baglieri *et al.* 2012; Belderbos and Heijltjes 2005). Interfirm relationships boost firms' capability to discover, combine, and recombine resources and knowledge that facilitate or constrain the formation of TCA (Andrevski *et al.* 2016).

Firms combining technical capabilities and knowledge exchange with their suppliers can generate improved new product development performance (Chang 2017; Cousins *et al.* 2011). Consequently, interfirm relationships represent a strategic resource because they grant access to larger volumes of tacit knowledge (Anand *et al.* 2002; Grant and Baden-Fuller 2004). Firms acquire tacit knowledge from building social capital with their clients, customers, or external partners (Hsu and Wang 2012; Mu *et al.* 2008). Krause *et al.* (2007) suggest that firms can develop different typologies of social capital to acquire knowledge through partners. These typologies are structural capital, cognitive capital, and relational capital (Krause *et al.* 2007).

Additionally, interfirm relationships enhance firms' ability to access the production experience held by their partners (Madsen and Leiblein 2015) and support firm ambidexterity (Guan and Liu 2016). Some scholars deem interfirm networks to be effective strategic devices that support firms in managing the opportunity exploitation process (Foss *et al.* 2013), and innovating and achieving TCAs (e.g. Demirkan and Demirkan 2012; Dyer and Nobeoka 2000; Martínez-Sánchez *et al.* 2009; Pittaway *et al.* 2004), thanks to the establishment of collaborative relations with universities, laboratories, and other research institutions (Kafouros *et al.* 2015).

However, these benefits can be shaped by relational and operational mechanisms that in turn influence interfirm longevity (Rahman and Korn 2014) and the firm's aptitude to achieve TCA (Anand *et al.* 2010; Hashai *et al.* 2015; Vilkmam and Keil 2003). Bengtsson and Johansson (2014) posit that the establishment of alliance portfolio relationships allows firms to respond more quickly to uncertainty, thereby rebalancing their asymmetric power relationships with competitors.

Andrevski *et al.* (2016) propose that alliance portfolios affect firms' ability to achieve TCAs. They suggest that alliance portfolio configurations impinge on opportunity recognition, opportunity development, and action execution. Some scholars argue that an important firm ability is the capacity to reshape interfirm relationships by exploiting existing partnerships (Beckman *et al.* 2004) and exploring new avenues with new partners (Baglieri *et al.* 2012).

This ability allows a firm to launch new technological trajectories and avoid lock-in effects, thereby enabling it to manage TCA. Some studies unveil the importance of explicit design-oriented knowledge in reshaping interfirm relations over time (e.g. Smart *et al.* 2007). Due to the characteristics of resources, partners, and the environment (Baum *et al.* 2000; Goerzen and Beamish 2005; Hagedoorn *et al.* 2018), firms' engagement in interfirm relationships may generate adjustment costs (Madhok *et al.* 2015) or increased risks (Bakker 2016), which, in turn, affect firms' CA. Such adjustments may be related to the contamination effects of alliances, where incompatible resources may erode the properties that make the alliance valuable (Gander *et al.* 2007) or increase learning risks by alliance partners (Bakker and Knoblen 2014; Fang and Zou 2010). Grunwald and Kieser (2007) posit that learning between partners can be successfully mitigated by some interconnected transaction mechanisms.

#### *Action-based management of TCA*

Complementary with resource-based management of TCA, recent literature on action-based management of TCA explicitly takes into account the 'need to be increasingly responsive to external events' (Turner *et al.* 2010, p. 854). The bulk of this literature is informed by three theoretical perspectives (D'Aveni *et al.* 2010). First, Schumpeterian creative destruction explicitly appreciates an 'evolutionary character of the capitalist process' (Schumpeter 1942, pp. 82–83). Second, the Carnegie School theory of the firm, and more specifically Cyert and March (1963), draws attention to information flow and the critical search of routines to preserve and replace corroding CAs. Third, Nelson and Winter (1982) propose an economics-based evolutionary perspective considering the natural selection of routines arising within the firm's boundaries. Taking advantage of this set of conceptual tips, extant studies pinpoint two main aspects concerning action-based management of TCA: (i) moves and countermoves and (ii) patterns over time.

*Moves and countermoves.* Moves and countermoves refer to the nature of strategic actions, the impact of these actions on rivals' reactions, and their reversibility (Chen and MacMillan 1992). They include attacks, competitive signalling, price changes (Giachetti and Dagnino 2014), and combined non-market and market actions (Wei *et al.* 2015). The

management of moves and countermoves calls attention to the importance of timing in shaping a 'regular and sequential balance between change and stability', which 'is associated with long-term success' (Klärner and Raisch 2013, p. 184). Dykes *et al.* (2018) emphasize three dimensions of speed. First, *recognition speed* is the rapidity with which managers weigh the opportunity to take a specific strategic move. Firms can reap an advantage by means of a few selected strategic moves, especially when customer segments have not yet developed, and advantages are highly temporary (Jha and Lampel 2014). Similarly, by investigating the interface between technological knowledge formation at the industry and firm levels of competition, Giachetti and Dagnino (2014) corroborate the occurrence of *repertoire* simplicity over a series of competitive moves and countermoves to achieve TCA. Second, *decision speed* represents managerial rapidity in making decisions. Third, *execution speed* refers to the speed with which moves and countermoves are implemented. They include:

1. *Short product lifecycle* (i.e. the rapid conversion of new products to maturity). The time window for bringing new products and customer-tailored projects to the market becomes increasingly shorter (Bengtsson and Johansson 2014).
2. *Short time to market*. This implies that the window of opportunity becomes, temporally speaking, quite limited and therefore, firms can no longer use conventional 'wait and see' strategies to outcompete their competitors. Rather, firms need to advance new services and products and discover ways to match potential customer needs as quickly as possible (Bengtsson and Johansson 2014). Drawing on Boyd and Bresser (2008), who found a curvilinear relationship between responder performance and response timing, Katila *et al.* (2012) note that firms should focus on the timing to locate unexploited opportunities to reap CA by exploiting novel customer segments. Giachetti *et al.* (2017) conceive actions imitating the follower along imitation scope and speed, which depend on product diffusion in the market where firms operate (Giachetti and Lanzolla 2016).
3. *Increased projectification*, which refers to firms' engagement in specific customer projects that have a short-term perspective. Actually, such increased projectification, in turn, frequently motivates the firm's short-term relations with its rivals (i.e. *short-term competition*). Since such rela-

tionships are based on specific customer projects, firms often have as many relations as they have projects (Bengtsson and Johansson 2014).

Given the crucial importance of moves and countermoves in managing TCA, scholars explored the factors leading to such moves and countermoves. They focused on the role of strategic leadership in making fast and complex decisions (Lin and Rababah 2014). Executives may vary in their temporal depth orientation (Nadkarni *et al.* 2016). Their managerial perceptions may reduce the timing of competitive actions (Iriyama *et al.* 2016), or the benefits from the learning effects associated with time delays (Hopkins 2003; Luoma *et al.* 2017), or the firm's aggressiveness (Ferrier 2001). Conversely, Hsieh *et al.* (2015) encourage managers to pay attention to the risk of commitment escalation.

A complementary point of view regarding the factors leading moves and countermoves comes from Ayyagari *et al.* (2015). They show that business group-affiliated firms are more likely to respond to multinational firms' threats vis-à-vis independent firms. Firms within business groups have easier access to the resources and capabilities required to effectively contend with foreign firms.

Finally, recognition, decision, and execution speed appear to be linked to firms' inter-functional coordination among functions (especially marketing and R&D) and to the mechanisms to assimilate customer knowledge within a scientific knowledge base in the innovation process (De Luca *et al.* 2010).

*Patterns over time.* Besides considering firm moves and countermoves for achieving TCAs, extant research looks at their dynamic implications over time (Volberda and Lewin 2003) (i.e. patterns of moves and countermoves over time; Rockart and Dutt 2015). First, scholars consider the *sequences of moves and countermoves* of firms and rivals. Chen and Miller (2012, p. 138) consider the competitive environment as being inherently 'dynamic and interactive'. Sequences of actions and reactions between rivals, including the introduction of new products, advertising campaigns, entry into new markets (Chen *et al.* 2010a; Skilton and Bernardes 2015), and changes in pricing policy, constitute the building blocks for dynamic competition. Within moves and countermoves sequences, we consider blending cooperative moves and competitive countermoves to achieve a TCA (Bengtsson and Kock 2000; Gnyawali and Madhavan 2001; Gnyawali *et al.* 2006, 2010).

Second, the TCA literature unearths path-dependency dangers in organizational search (Hutzschenreuter and Israel 2009). The knowledge creation process is path-dependent since it combines and recombines previous and new knowledge over time (Nerkar 2003). Katila *et al.* (2012) found that, rather than exploring new competitive landscapes, firms frequently try to take advantage of already known competitive areas. Thus, their long-term performance increases when firms perform some searches (further) away from current knowledge (Katila *et al.* 2012). Ross *et al.* (2018) recently conceptualized an ‘act and see approach’, according to which, even if firms are late in commercializing new products, they invest in R&D to enrich their knowledge base. The effectiveness of such an approach is contingent on the firm’s learning capacity.

## Consequences of temporary advantage

To survive a swiftly evolving business environment, firms orchestrate resources and competitive actions (Bridoux *et al.* 2013) to effectively introduce new products and process technologies so as to rapidly build sequences of TCAs (Wang *et al.* 2014). We can break down the consequences of TCA into five blocks: (i) volatility in firm performance; (ii) market share erosion; (iii) industry leader dethronement; (iv) red queen effect; and (v) scale-up opportunities.

### *Volatility in firm performance*

The TCA literature shows evidence of an increase in financial performance volatility (Bharadwaj and Dong 2013; Huang *et al.* 2015; Mackelprang *et al.* 2015). As Andreovski *et al.* (2014) argue, firms competing in TCA industries make many competitive moves that are expected to increase market share and performance. This situation occurs because rival firms are impotent vis-à-vis every competitive move. However, the improvement of the market share and performance is only temporary.

In the context of high-level industry competitive aggressiveness, speed to market should be interpreted as a strategic investment instead of a cost outlay (Calantone *et al.* 2014). ‘Associated time pressures incentivize firms to accelerate the process of assessing product reliability in order to shorten new product time to market, but doing so may also produce more uncertain product reliability levels’

(Mackelprang *et al.* 2015, p. 72) and, in turn, performance volatility. Therefore, understanding the connection between earnings pressure and long-term corporate governance becomes extremely relevant (Zhang and Gimeno 2016).

### *Market share erosion*

As Bharadwaj and Dong (2013, p. 11) argue, TCA industries ‘are characterized by compressed product life cycles’. In the early stages of the industry lifecycle, when prices are relatively high, firms usually witness a race to achieve scale economies and exploit opportunities swiftly before prices decrease. The continuous pressure to speedily achieve the best results in the shortest possible time, and the implementation of resource-based and action-based strategies in short time intervals (Hughes-Morgan and Ferrier 2017), further accelerates the erosion of and upsets the basis for CA (Bengtsson and Johansson 2014). Consequently, in TCA industries, firms with a leading position erode their own CA by launching the next generation of advantages to achieve future market leadership (Nault and Vandenbosch 1996). Put differently, a firm may cannibalize its own products by launching new products that overtake the market share of their current products. As such, the firm strives to keep its CA and market leadership over a long time.

### *Industry leader dethronement*

The high level of technological and demand uncertainty that characterizes TCA industries and, also, the characteristics of the challengers’ competitive actions affect the firm’s capacity to maintain its market leadership (Ferrier *et al.* 1999). If we move our focus from the incumbent firms that already compete in the industry to the young technology-based firms, technological and demand uncertainties may represent a factor that reduces entry barriers and thus may open up new opportunities to disrupt the market (Clarysse *et al.* 2011).

Smith *et al.* (2001) argue that successful firms show that high-level competitive aggressiveness, for instance, in terms of timing the attack, makes it difficult for industry leaders to effectively react. However, imitation from rivals can reduce the dethronement effect. As Ross and Sharapov (2015) maintain, the imitation process allows firms to counterweight their followers’ potential competitive strength because it ‘releases information that helps the follower to

leverage capability advantages' (Ross and Sharapov 2015, p. 675).

Finally, we call attention to firm strategy based on *experimental technologies* (Siren *et al.* 2012) that are able to crack the market with new products but, at the same time, pose ethical dilemmas. Firms have limited knowledge of how to balance social risks and benefits (Van de Poel 2016).

### *Red queen effect*

Frequently, industry leader dethronement is the outcome of *red queen* competition. In such cases, the challenging firm's aggressive actions (or innovations) improve its performance, and therefore, the old market leader loses its market power (Giachetti *et al.* 2017). Also, the challenging firm's actions lead to an escalation of market rivalry (as concerns the number and speed of actions), which, in turn, negatively affects initial firm performance (Derfus *et al.* 2008). To effectively compete, firms inevitably need to increase the number and speed of their actions and, over time, this action escalation means that 'all the firms end up racing as fast as they can just to stand still relative to competitors' (Derfus *et al.* 2008, p. 61).

### *Scaling up opportunities*

Competition in TCA industries may provide a fertile context, where firms may spread out their capability to grow fast, thereby overtaking the restraints of extant structures and resources (Clarysse *et al.* 2011; Larrañeta *et al.* 2014). Put differently, it leads to opportunities to disrupt the market and scale up the firm's dimension. By discussing the process of globalization as a driver of TCA, we argue that it steps up the incentives for innovation and business opportunities (Hitt *et al.* 1998), since globalization is expanding the marketplace. Thus, we can construe the recent phenomenon of born global firms (Coviello 2015) that 'typically sell innovative, self-developed technology-based products to global markets' (Liu 2017, p. 46).

Furthermore, the diffusion of the World Wide Web (Kotha *et al.* 2001) and, more generally, of the digital economy (i.e. a factor leading technological uncertainty) makes it straightforward to launch new businesses by organizing minimal staffing (Josefy *et al.* 2015). Thus, we call attention to digital economies (Gnyawali *et al.* 2010; Sambamurthy *et al.* 2003).

## Implications for theory

The conceptual map proposed (Figure 1) shows that the globalization process, technology and demand uncertainty, and competitive intensity are antecedents of an industry transformation that is fast (Kunisch *et al.* 2018; Wiggins and Ruefli 2005), complex (Lewin *et al.* 1999), and disruptive (Ansari *et al.* 2015). The scenario where firms operate turns into the main enabler of their search for continuous improvement, with a special focus on innovation (Josefy *et al.* 2015).

Extant literature recognizes that the management of TCA embraces both a resource-based approach and an action-based approach. Although the purpose of these approaches is ultimately to improve the market position and the value of firm products and services, the TCA literature disengages from the evolutionary paths of traditional paradigms in strategic management. Actually, in TCA industries firms should *continuously search for new technological, organizational, and strategic solutions* that may allow them not only to hang on in the market but also to thrive and prosper (Andersen 2004; D'Aveni *et al.* 2010; Galunic and Eisenhardt 1996). Therefore, we move away from the conventional sources of CAs according to the industry-led and resource-driven approaches, suggesting that 'nothing is sustainable forever' (D'Aveni *et al.* 2010, p. 1373). Thus, the sustainability of CA becomes rare and declining in duration (Wiggins and Ruefli 2002).

For its theoretical underpinnings established in unorthodox economics approaches such as Schumpeterian and Austrian economics, the TCA literature unveils dramatically the crisis of the industry-driven and resource-based approaches (see Table 3). According to the TCA literature, the emerging paradigm of competition is far from static but is instead inherently dynamic. This refers to the existence of low or negative entry barriers and an exchange or sequence of actions and responses between innovative firms (Barr and Huff 1997). Accordingly, generic competitive strategies inspired by the SCP paradigm and the RBV ought to give way to the *creative* combination and recombination of resources that support a sequence of innovative actions and innovative responses. This suggests that the way to sustain advantages may no longer be a 'one-shot story' but should be shored up by means of designing and implementing a series of CAs. In TCA industries, we expect firms to continuously orchestrate their resources and DCs according to demand and

Table 3. Main features of the key approaches in strategic management inquiry

Approach	Sustainable competitive advantage		Temporary competitive advantage
	Structure–conduct–performance	Resource–capability–performance	
<b>Configuration</b>	Static: comparison between two points in time	Static/dynamic	Dynamic: exchange of actions and responses between firms
<b>Rents</b>	Chamberlinian rents	Ricardian rents Schumpeterian rents	<ul style="list-style-type: none"> <li>Competitive advantage is time-dependent and ephemeral</li> <li>Only relative advantages exist; temporary rents</li> <li>Performance is volatile</li> </ul>
<b>Competitive advantage</b>	Products and positioning	Resource/factor heterogeneity	Product innovations
<b>Basic principle</b>	Industry structure drives competition and profitability	Firm resources are the basis for profitability	<ul style="list-style-type: none"> <li>Competition is dynamic and interactive</li> <li>Firm resources and actions drive firm performance</li> <li>Series of advantages</li> </ul>
<b>Theoretical basis</b>	Mason–Bain industrial organization economics	Penrose, managerialism, Chicago industrial organization economics	Schumpeterian and Austrian economics
<b>Focus</b>	(Five) competitive forces that make up the industry structure	VRIO framework	Firm's attitude towards combining and recombining resources and speedily managing competitive actions and responses
<b>Analytical level</b>	Industry level	Firm level	Multilevel approach (firm, industry, platform, ecosystem)
<b>Power relations between firms</b>	Symmetrical	Asymmetrical	<ul style="list-style-type: none"> <li>Tendentially asymmetrical</li> <li>Red queen effect</li> </ul>
<b>Competitive strategy</b>	Generic types	Generic types	<ul style="list-style-type: none"> <li>Sequences of actions and responses</li> <li>Scaling up</li> <li>Exponential technologies</li> <li>Digital economies</li> </ul>

Sources: Chen and Miller (2012), Foss *et al.* (1995), Mocchiari Li Destri and Dagnino (2005), with many adaptations.

technological uncertainties (Brown and Fai 2006; Brown and Maylor 2005). Moreover, since they lead to 'continuing, nonmarginal change in the nature of competition', as well as 'nontrivial organizational change' (Craig 1996, p. 302), demand and technological uncertainties have important consequences for the firm's capacity to achieve such coordination (Whittington *et al.* 2017). As Fiol (2001, p. 629) posits, firms should 'constantly destroy and cannibalize prior competencies to build up a stock of inimitable and unique competencies'.

Actually, the TCA literature has the merit of shifting attention from the pursuit of a single long-term advantage to the hunt for a series of TCAs (Wiggins and Ruefli 2005), and of introducing empowering structures and cultures to achieve such a series of temporary advantages (He *et al.* 2014). Vis-à-vis SCP and RBV explanations, unfolding TCA illustrates how it is possible to decrease the pressure of ever shorter advantage lifecycles. In TCA industries,

firms usually do not try to fully exploit the benefits of a CA over time. Conversely, before a rival firm may come over to destroy its CA, firms try to develop a new advantage. This condition means that firms may decide to self-cannibalize their CAs with the aim of deterring an outside attack. Therefore, firms delay or prevent the inception of the red queen effect (Derfus *et al.* 2008).

Contextualizing TCA vis-à-vis SCA, we can argue that SCA no longer applies in many contexts or that it may apply in a different way, for instance, when firms have a multiplicity of strategies (D'Aveni *et al.* 2010) or multiple business models (Casadesus-Masanel and Tarzijan 2012; Markides and Charitou 2004), sequentially or contextually focusing on TCA or SCA. In this regard, it is noteworthy to call attention to Huang *et al.*'s (2015) work. The authors show that a sequence of TCAs can make available a set of resources to promote innovation. As such, firms can achieve VRIO resources and build new entry

barriers to sustain their CA. However, over time it is likely that the antecedents of TCA will inexorably hurt and erode the sustainability of CA. Then, we expect to observe once more a significant reduction in the durability of CA.

Specifically, we clarified that CA has become increasingly time-dependent and ephemeral, such as that SCA requires a dynamic update in mirroring TCA. We stress that the accelerated pace of competitive advantage is a function of the globalization process, technological and demand uncertainties, and competitive aggressiveness that, over time, can become more or less relevant. In the same time periods and/or industries, it is possible to corroborate Wiggins and Ruefli's (2005) contention that firms compete to win a series of TCAs. Similarly, in other periods and/or industries, market positions and VRIO resources may lead to rents that provide additional capital to build up entry barriers and deploy new types of resources and capabilities. Consequently, depending on this condition, CA may end up igniting another cycle of more sustainable advantage (Huang *et al.* 2015).

## Challenges for future research

In this section, we organize the TCA research agenda as a mirror image of the way we have reviewed the TCA literature.

### *Antecedents of TCA*

The conceptual map proposed encapsulates the accessible empirical evidence on the widespread perception that several firms operate in TCA industries. However, we recognize that this body of literature overlooks some relevant issues. First, scholars advocate that the causal relationship between the globalization process and firms' ability to develop TCA in both developed and emerging countries is far from conclusive. Kotha *et al.* (2001) argue that the TCA literature can benefit from examining the effects of variations in business models on international strategies. Shifting to the individual level, Coviello (2015) claims that psychology-informed theories might be of help for investigating firms' entrepreneurial internationalization. From a theoretical viewpoint, a focus on the differences among countries represents a favourable starting point for investigating the relationship between and among countries' economic interconnections and the sustainability of CA and, more

generally, the question about how and to what extent they affect CA durability.

Second, the extant literature largely uncovers the lack of longitudinal empirical studies on TCA specifically dealing with demand or technological uncertainties. Furthermore, as these types of uncertainty may not be independent of one another, it would be interesting to appreciate their interrelations and grasp how they jointly affect the shifting nature of CA (SCA vs. TCA). To that, scholars may add the detection of the interrelation between the evolutionary theory of the firm (ETF) (Nelson and Winter 1982) and contingency theory (Duncan 1972). ETF is particularly useful in regard to assessing, under demand uncertainty, the adaptive behaviour of firms in shifting from SCA to TCA (Roberts and Grover 2012). Research grounded in contingency theory, however, can be particularly valuable for understanding such behaviour (Karim *et al.* 2016). One might suppose that the existence of an interactive effect of demand uncertainty and technological uncertainty shapes the conditions under which the rivals' innovation intensity and imitation in the industry are amplified (Pacheco-de-Almeida 2010, p. 1502). Future studies might be able to enrich our understanding of how different types of uncertainty (Zheng and Mai 2013), standalone or in interaction, may shape the pace of change by combining multiple theoretical perspectives, especially evolutionary theory and contingency theory.

Third, research opportunities exist regarding competitive aggressiveness. Following Ajamieh *et al.* (2016), we encourage scholars to dig deeper into the relationship between industry competitive aggressiveness and TCA by searching for internal and external factors that might moderate this significant relationship. DCs might be helpful in detecting firm internal capabilities that can support (or alleviate) a high degree of competitive aggressiveness. Moreover, scholars can take advantage of SCP analysis to identify external factors that can facilitate the firm's ability to exploit TCA in industries with a high degree of competitive aggressiveness. Such moderating factors can affect firms' level of aggressiveness in the market.

Finally, while the proposed conceptual map considers four key antecedents of TCA, it seems appropriate to consider a wider spectrum of variables. D'Aveni *et al.* (2010) suggest considering *inter-industry convergence* (i.e. 'the blurring of boundaries between industries by converging value propositions, technologies and markets'; Bröring

2010, p. 273). While the extant literature ‘considered this phenomenon only in terms of technology’ (Kim *et al.* 2015, p. 1745), the industry convergence process drives industry structure to change from a vertically integrated business model towards new models (Hicklin *et al.* 2013; Huang *et al.* 2015; Kim *et al.* 2015). To further inspect this issue, scholars may take advantage of using knowledge constructs grounded in open innovation and absorptive capacity theory (Enkel and Heil 2014; Enkel *et al.* 2017). Hence, they may enrich the scrutiny of TCA by comparing firm resources and capabilities that lead to innovations and firms’ ability to ignite a series of TCAs. This condition may also be influenced by inter-industry convergence processes.

### *Management of TCA*

*Resource-based management of TCA.* Regarding the management of TCA at the intrafirm level, the detection of a CEO’s psychological heuristics and biases might help understand the antecedents of repertoires of firm actions and responses. A CEO’s psychological heuristics and biases have a bright side and a dark side. The TCA literature analysis reveals that little attention was devoted to the possibility that these managerial heuristics and biases may be an effective solution to tackle TCA settings. Picone *et al.* (2014) recognize that, since hubristic CEOs may be overconfident in their ability and intuitions, they do not suffer from ‘paralysis of analysis’ (Lenz and Lyles 1985) and engage in fast decision processes that may carry TCA advantages. As such, building on this contention and on upper echelon theory, further studies may help enrich our understanding of the formation of TCAs and their development over time.

Our literature appraisal pinpoints that, in conditions of high technological and demand uncertainties, the endowment of resources and DCs supports the exploitation of new opportunities (Sirmon *et al.* 2007). Sirmon *et al.* (2008) argue that the higher effect of the managerial role in bundling and deploying resources emerges in contexts characterized by high deployment flexibility. Combining these two conceptual arguments, an intriguing direction for future research is understanding how resource portfolio characteristics (e.g. breadth and depth) may affect deployment flexibility and thus managers’ effectiveness in bundling and deploying firms’ resource portfolios. We call for studies that develop extant research by showing whether competing in TCA industries is a key

variable that shapes the relationships among firm resources and DCs deployment flexibility, and the exploitation of new opportunities. This line might complement Sirmon *et al.*’s (2007) framework for managing the resource orchestration process with a focus on TCA industries.

Moving to the management of TCA at the firm level, future research may combine studies on strategic leadership and DCs for achieving TCA. Because of its role and features, strategic leadership appears to be closely connected to the firm’s functional processes and to the renewal of structures necessary to achieve TCAs (Helfat and Martin 2014). DCs might also influence firm performance by means of TMT capabilities, such as functional capabilities (Wilden *et al.* 2013). Accordingly, this is a promising area for improving the knowledge at the interface between three significant streams of inquiry: TCA, TMT, and DCs.

Focusing on the role of capabilities in managing TCA, strategy research argues that the accumulation of experience with rivals’ moves allows firms to achieve a series of TCAs. Firms that develop capabilities at faster rates can fill up a larger capability gap with the same amount of experience (Rockart and Dutt 2015). Therefore, the need to close the capability gap leads executives to focus on reducing the time required to spot or create unexploited opportunities. As such, the literature would profit from studies exploring how firms can win a TCA series by exploiting customer segments that are less developed (Katila *et al.* 2012) or by generating entirely new segments.

According to our literature review, in many industries ‘time is the competitive tool of the 21st century’ (Harvey and Griffith 2007). Quite surprisingly, time is frequently not incorporated in TCA management or is incorporated in a merely implicit fashion. Hence, we argue that the effectiveness of ‘combinative capabilities’, intended as the firms’ capability to assimilate, integrate, and develop knowledge resources (Kogut and Zander 1992), is clearly related to the different timing with which combinative capabilities are used vis-à-vis competitors (Zott 2003). As such, scholars suggest that the issue is particularly important for the transfer of know-how inside the organization (Kachra and White 2008; Slaughter and Kirsch 2006). We call for studies that, drawing on organizational theory, unveil the ‘loci’ where such differential timings are generated.

Likewise, future studies should develop inquiries related to TCA management at the interfirm level. While we observe that TCA research has started to

inspire inquiry into strategic alliances' temporal conditions, we also recognize that other types of interfirm relationships, such as firm clusters, platform markets, and business ecosystems, may benefit from investigations performed in light of TCA (D'Aveni *et al.* 2010). We suggest detecting the role of platform markets in current competitive contexts (Cenamor *et al.* 2013). Other scholars focus on the advantage provided by IT-enabled knowledge platforms, if knowledge is 'assimilated into the ongoing work processes in organizations' (Purvis *et al.* 2001, p. 117). Future inquiry should take into consideration how platform-based market theory may drive platforms to cope with TCA.

An additional feature of TCA management at the interfirm level regards business ecosystems (Kapoor and Agarwal 2017). On the one hand, ecosystems promote cooperation among actors and the combination and recombination of knowledge. On the other hand, the affiliation with an ecosystem makes it easier to imitate innovative firms and erode CA. Therefore, it would be interesting to study how entrepreneurial ecosystems contribute to turning SCAs into TCAs. As such, researchers can find value in identifying and exploiting theoretical constructs grounded in the knowledge spillover theory of entrepreneurship.

*Action-based management of TCA.* Regarding action-based management of TCA, we detect lines for future inquiry. First, while the link between a technological platform and corporate strategy has already been unveiled (Kim and Kogut 1996), following Corradini and De Propris (2017) we call for studies that, drawing on the theory of the combinatorial nature of technological change (Fleming 2001; Fleming and Sorenson 2004), explore the interplay between the benefits of local embeddedness related to the firm's network and the firm's capacity to grow internationally. This line may enrich our understanding of how internationalization and network strategies coexist and shape the evolution of firms' technology platforms over time.

Second, real option theory allows juxtaposing specific moves and countermoves and generic path-dependent approaches to managing (and staging) investments under uncertainty (Adner and Levinthal 2004; Kogut and Kulatilaka 2001). However, it has fallen short of operationalizing the complexity and duration of cooperative projects and competitive responses (Rindova *et al.* 2010). The increased need for strategies that combine competitive and cooperative

actions to achieve TCA features the growing conceptual importance of this strategic management area.

Third, we observed that the extant literature usually considers action-based management of TCA and resource-based management of TCA separately (Ndufor *et al.* 2011). However, Kotha *et al.* (2001) noted the importance of jointly taking into account resource-based and action-based management in international business. Nadkarni and Perez (2007) find that domestic resources and competitive actions shape a firm's commitment to entering foreign markets indirectly through national mindsets. Atuahene-Gima *et al.* (2006) stressed the role of marketing strategy innovativeness as a firm capability helpful in product development. Fang and Zou (2009) found empirical support for the effect of marketing DCs on achieving CA. More generally, since competitive action combines a variety of factors, such as high price competition or high levels of advertising, firms are prone to react or adapt their resources and capabilities to rivals' competitive actions to achieve TCA (Tsai and Yang 2013). Hence, the integration of resource-based management and action-based management of TCA needs to fathom how the renewed resources possessed by firms depend on actions undertaken by competitors (Schmitt *et al.* 2018) and vice versa in a mutual cause-effect relationship.

### *Consequences of TCA*

First, given the performance volatility that characterizes TCA, conventional measures of performance (such as return on assets and return on equity) have become fairly ineffective in symbolizing firm success or failure and, therefore, TCA in fast-changing environments (Murali and David 2012). Inoue *et al.* (2013) argue that when subjected to volatility, the analysis of firm financial performance reveals inadequate guidance for future strategic choices regarding TCA. Consequently, future research should seek to shape a few measures to appropriately capture TCA. As such, Shinkle *et al.* (2013) emphasize the necessity of increasing the range of specific market orientation measures by taking into account the differences across countries and geographical spaces. Kownatzki *et al.* (2013) call attention to control mechanisms that affect decision speed at both the corporate and business levels. Parker *et al.* (2017) pinpoint the importance of product quality performance, arguing that performances which diverge from firms' aspirations entail a subsequent product introduction rate. Overall, we call for

studies that explore appropriate performance measures to detect the (changing) nature of TCA. This call is especially important in emerging (Hermelo and Vassolo 2010) and fragile institutional contexts (Ault and Spicer 2014), where country rules and regulations influence the achievement of superior financial performance. Regulatory conditions may profoundly affect the features of capital markets, access to credit, availability of external financing and other factors, thereby influencing firms' financial performance in various ways.

Moreover, it is important to explore how firms build their capabilities to reduce volatility and increase performance. Drenevich and Kriaciunas (2011) suggest assessing the opportunities to reduce costs and increase revenues, thereby strengthening the firm's competitive position and hastening rivals' competitive actions (Lee *et al.* 2010). While a cost-cutting strategy is usually seen as a good move, firms concurrently need to carefully assess what types of cost they seek to trim down. Lessening specific kinds of costs may be deemed a detrimental move for implementing a TCA strategy. As such, Shaw *et al.* (2013) contend that a reduction in costs related to human resources may be harmful to achieving TCA. Conversely, Gimeno and Woo (1996) posit that only a differentiation strategy (rather than a cost leadership approach) may impede an escalation of competition. Crossing the borders between strategic management and managerial accounting, we call for studies that, taking together strategic agility, availability of resources, cooperative strategies, and so on, may represent a way to assess firm performance in the presence of TCA (Brozovic 2018; Tienari and Tainio 1999).

Second, given market share erosion, we note that the TCA literature has overlooked measuring the *duration* of a temporary advantage using the rate of convergence (persistence) of profits above or below the norm (Villalonga 2004). This is important since it may shed light on the crucial relationship between TCA and firm performance in various institutional contexts, thereby facilitating the understanding of industry- and country-level effects of TCA.

Third, regarding industry leader dethronement, extant research has not fully explored the specific intent behind challengers' competitive actions causing the dethronement effect. Competitive dynamics literature acknowledges that high-level competitive aggressiveness (Smith *et al.* 2001) and imitation processes affect the firm's capacity to maintain its market leadership (Ross and Sharapov 2015). How-

ever, Lieberman and Asaba (2006, p. 382) argue that, if they are not guided by strategic intent, these competitive actions can lead to destructive competition, overinvestment, reduced variety, and increased risk. Thus, a research direction is to understand strategic intent by drawing on other theoretical lenses that might shed light on this issue. According to Ferrier *et al.* (1999, p. 385), 'subsequent research could adopt the "social construction of rivalry"' view (Porac and Thomas 1990) as a means of identifying the intended target rival and intended effects of competitive action by including subjective measures of the competitive importance or magnitude of different kinds of action.

Finally, organizational learning studies recognized a wide spectrum of learning mechanisms (e.g. experiential, mimetic, and vicarious) that are not captured in measuring the red queen effect (Giachetti *et al.* 2017). Thus, constructs based on organizational learning theory might serve as theoretical underpinnings for addressing this line of research.

## Conclusion

This paper has analysed the TCA literature through the development of the conceptual map of antecedents, management, and consequences of TCA. By conducting a state-of-the-art review of the literature, it extends our understanding of the nature of the relationship between antecedents, management, and consequences of TCA. In such a way, it reveals the contours of a fragmented landscape that raises major intriguing challenges for future TCA inquiry.

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