

ARTICLE

Disruptive innovation from a process view: A systematic literature review

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There are many challenges in identifying and managing a disruptive innovation stemming from the limited knowledge on how it unfolds over time. Researchers have identified early signals and ex ante conditions that indicate its occurrence. However, an analysis from a process view acknowledging the underlying dynamics is yet to be done. By taking a process view within a systematic literature review, we analyse the scattered findings on the process of disruptive innovation to identify events and actions leading to a disruptive effect over time. We challenge the understanding of disruptive innovation as an outcome and the linearity of the process by proposing that disruptive innovation can be understood as occurring through emergent dynamics. These dynamics are constituted by: (a) the timing of entry and underlying processes that influences (b) the synchronization of events and actions and is shaped by (c) the adaptability of strategic actions. Thus, we complexify the concept of disruptive innovation to support the understanding of its unfolding and advance its manageability.

1 | INTRODUCTION

In an increasingly dynamic environment, incumbents can achieve a competitive advantage through continuously innovating their market offering (Christensen, 1997). However, the extant literature identifies and describes types of innovations that have a disastrous effect on incumbents (Christensen, 1997; Henderson & Clark, 1990; Tushman & Anderson, 1986). In the case of disruptive innovation (DI), these innovations are typically introduced by industry newcomers (henceforth: entrants) that introduce a different performance set relative to existing offers and modify the status quo within the mainstream market (Christensen, 1997).

DI describes a process in which an entrant's innovation first gains a foothold in a niche market. The entrant then continuously improves the innovation's performance, unaffected by the incumbent, and eventually launches on the mainstream market, eroding the incumbent's market share (Christensen, Raynor, & McDonald, 2015). Disruption

occurs once mainstream customers begin to purchase the entrant's offering in volume (Adner, 2002).

Previous reviews debated the concept's vagueness and its lack of predictability (Danneels, 2004; Markides, 2006; Yu & Hang, 2010). They focused on the causality of the success and failure of incumbents and entrants (Danneels, 2004), exploring the factors that inhibit or enable disruption (Yu & Hang, 2010), and the market effects and managerial implications of disruptive offerings (Markides, 2006).

Previous studies focused on DI as an outcome considering causes or consequences (Christensen, 2006; Danneels, 2004), rather than the DI process and its emergence (Langley, 2007; Schroeder, Van de Ven, Scudder, & Polley, 1986). By focusing on causality and predictability, these studies show a variance approach overlooking how change unfolds as a temporal sequence of events (Van de Ven & Poole, 2005). Consequently, the DI process has been described as a series of steps that impede a holistic view. The emergence, unfolding, and development of new offerings, and the underlying

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interconnection of events and actions that lead to a disruptive effect are yet to be understood (Danneels, 2004).

We analyse existing DI literature from a process view, exploring its occurrence beyond a linear model to develop an understanding of how the DI process unfolds. We question how the currently described sequential process of DI differs from understanding DI from a process view and how existing findings can be integrated to identify the DI process over time (Tsoukas, 2017). This study answers the following research question: How does the extant literature describe the process leading to a disruptive innovation over time?

We conduct a systematic literature review on existing studies that analyse stages of the DI process to understand how they describe events and actions leading to disruption. We explore extant literature to identify the process, which we understand as continuous interconnections of events and actions over time (Pettigrew et al., 2001), surrounding an innovation, shaped by the continuous interplay of the entrant's actions, the incumbent's (re-)actions, and events in the external environment, to understand how these changes lead to a disruption (Langley, 2007). Specifically, we explore the DI process initiated and steered by an entrant taking advantage of the incumbents' overshooting of customer needs (Christensen, 1997). We emphasize continuity and dynamism rather than states and final outcomes, acknowledging multi-tempos in the process (Pettigrew et al., 2001) and regarding synchrony, diachrony and asynchrony as an integral part of the process (Garud, Gehman, Kumaraswamy, & Tuertscher, 2017).

We contribute to the DI literature by integrating previously identified events and actions in a dynamic progression. Our findings suggest that the DI process occurs within an initiation phase, a niche market phase, and a mainstream market phase, with (1) the perception and expectations of the opportunity and the entrant's innovation, (2) the entrant's strategy, and (3) the utilization of enabling technologies and factor markets shaping the dynamics characterizing each phase. We articulate these findings into a process model revealing a proliferation of alternative paths dissuading from disruption, which we understand as missed opportunities of DI. Thus, to remain on a disruptive path requires a purposeful choice of actions towards achieving a continuous fit with the environment to disrupt the mainstream incumbents. By understanding DI as a dynamic progression, we propose the process in terms of (a) the timing of entry and underlying processes that influences (b) the synchronization of events and actions and is shaped by (c) the adaptability of strategic actions. We thus develop the theory of DI by applying a process view, integrating a dynamic dimension to the previously linear understanding of the DI process. We conclude by identifying areas for research to further our understanding of DI as a process.

2 | THEORETICAL BACKGROUND

2.1 | Disruptive innovation and its occurrence

Bower and Christensen (1995) observed that incumbents fail when innovations introduce a different performance relative to the existing

mainstream market offers. This failure was attributed to the emergence of "disruptive technologies" (Christensen, 1997) and later modified to "disruptive innovations", acknowledging that DI is "a business model problem" (Christensen, 2006, p. 48). The business model in which the technology is deployed paralyzes the incumbent as its profit model and other investments make it financially unattractive to pursue the DI (Christensen, 2006). We understand a business model as describing the architecture of value creation, delivery and a firm's capture mechanisms (Teece, 2010). A disruptive business model redefines the meaning of value creation and capture (Cozzolino, Verona, & Rothaermel, 2018).

Since its first observation, the phenomenon of DI has been identified in different cases of incumbent failure (Christensen, McDonald, Altman, & Palmer, 2018). Its occurrence has been described as follows: the innovation enters the market by gaining a foothold in a niche or new market (Govindarajan & Kopalle, 2006), addressing overshoot or non-customers by offering more suitable performance attributes, frequently at a lower price (Christensen et al., 2015). The entrant then improves the innovation's performance over time, unaffected by the incumbent, who overlooks this potential competition. Disruption occurs once mainstream customers begin to purchase the entrant's offering in volume (Adner, 2002).

To increase the phenomenon's manageability, authors have focused on different process steps, early identification, and ex ante conditions (e.g. Keller & Hüsigg, 2009; Klenner, Hüsigg, & Dowling, 2013; Rafii & Kampas, 2002) without explicitly acknowledging the complexity and dynamism underlying the DI process (Tsoukas, 2017; Van de Ven & Poole, 2005).

2.2 | Disruptive innovation and process review

We challenge the linear and outcome-based approaches present in the extant literature as they focus mainly on static characteristics at certain steps within the process (Schroeder et al., 1986). We propose considering DI dynamically in terms of changes and interconnection of events and actions, focusing on the process rather than outcomes (Langley, 2007).

We understand events as occurrences or conditions within the environment that shape the disruptive path, whereas actions are activities undertaken to manage disruption (Langley, 2007; Tsoukas, 2017). An incumbent's action might be perceived as an event by the entrant and vice versa. Additionally, an event that is acted upon leads to another event, hence "each event arises out of, and is constituted through its relation to other events" (Tsoukas, 2017, p. 146), whereas "actions to improve performance engender reactions that feed back into further actions, often with consequences" (Langley, 2007, p. 273). Thus, we suggest a multi-temporal dynamic in which events happen and actions are performed to unfold change.

We acknowledge time as an integrative component in addressing changes within a dynamic context. Hence, details become identifiable as to why, when and how a DI occurs. We argue that conceptualizing from a process view adds a new dynamic dimension and

clarifies how disruption emerges, develops and grows. It thus develops the theory of DI by taking into account the non-linear effects of action and attempts to understand how such patterns arise (Langley, 2007).

To this end, we use the extant literature to identify the events and actions that lead to the emergence of DIs, their development, growth, and to market disruption, and subsequently identify new avenues for research.

3 | METHODOLOGY

Previous studies on DI focused on early signals and ex ante conditions at different stages of the process, providing a vast amount of literature with scattered findings. We posit that a systematic analysis and integration of this literature is required to identify the interconnection of events and actions (i.e. the process) and directions for further research. Thus, we conducted a systematic literature review focused on the DI process, establishing appropriate inclusion and exclusion criteria for a search strategy suitable to the research question to ensure a replicable and transparent process for bias minimization (Tranfield, Denyer, & Smart, 2003). We follow Tranfield et al. (2003) in the planning, reviewing and results stages. To ensure the inclusion of complex research questions and a deep reading of the content, we also performed a content analysis (Easterby-Smith, Thorpe, & Jackson, 2008).

3.1 | Planning the review

The review panel consisted of the three authors assessing the scope, relevance and size of the literature to delimit the subject area (Tranfield et al., 2003). A clear scope provided a basis for methodology adjustments and conceptual discussions of the research question and

the significance of the study. The panel defined the methodological protocol including keywords, perspective of analysis, and inclusion and exclusion criteria of papers to minimize bias in the literature review (Tranfield et al., 2003).

3.2 | Conducting the review

Data was selected in Web of Science using the following method:

1. A general search was conducted using the terms “disruptive innovat*” OR “disruptive technolog*”, narrowed to title, abstract, and associated keywords. As the incorporation of synonyms (e.g. “radical” or “revolutionary”) led to inaccurate results by broadening the scope on innovations, they were discarded. Only peer-reviewed papers and *Harvard Business Review* articles published after the initial definition of the concept (1995–2016) were included. This search yielded 786 papers. Although results were unspecific to “process”, we analysed the papers to identify relevant keywords that authors used to relate their research to the DI process (Figure 1).
2. The subsequent search used keywords identified in the first step. We found that the DI definition includes disruptive technology, DI, and business model (i.e. “disruptive innovat*” OR “disruptive technolog*” AND “business model*”). The latter was included due to the linkage between technology and business model in the DI process. We additionally specified the search on the identified process-related keywords. Beyond the keywords of “process”, “dynamics” or “diffusion”, we identified keywords such as “ex ante” (i.e. identification of disruptive potential before the disruptive effect) or “ex post” (i.e. identification of a disruptive innovation after the disruptive effect) which were used in the extant literature (e.g. Keller & Hüsig, 2009; Klenner et al., 2013). Researchers further used the keywords “lifecycle” or “evolution”, describing, for example, the

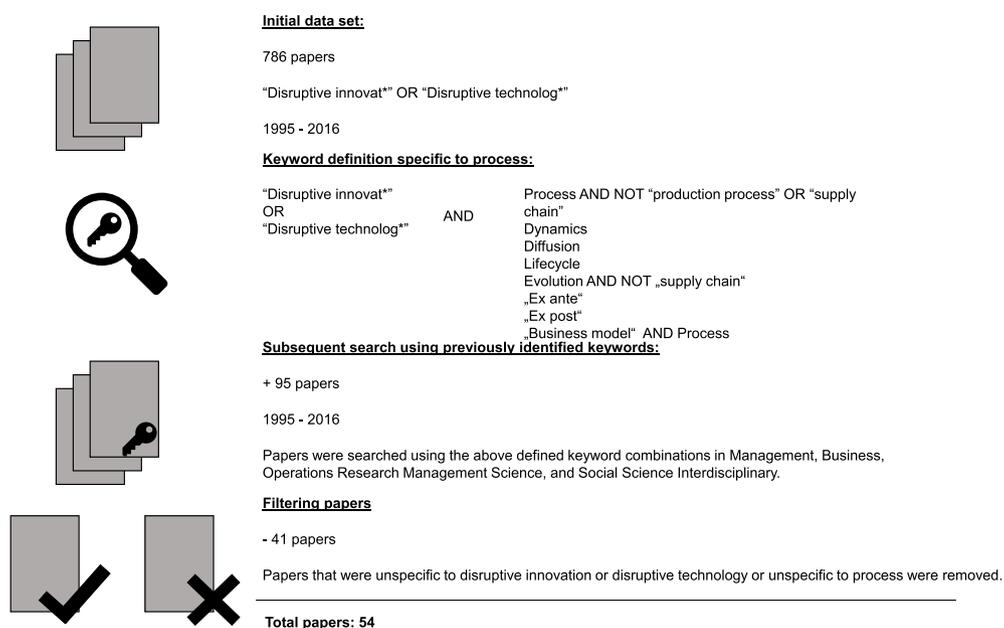


FIGURE 1 Data collection for systematic literature review in Web of Science [Colour figure can be viewed at wileyonlinelibrary.com]

emergence of the DI or the competitive dynamics within the niche market (e.g. Goldsby & Zinn, 2016; Kahl & Grodal, 2016).

3. We conducted the final search with the selected keywords shown in Table 1, each row presenting an individual search string. Thus, search strings such as “disruptive innovat*” OR “disruptive technolog*” AND “ex ante” were used to yield the final papers. The search was narrowed to title, abstract and associated keywords, limited to 1995–2016 and the fields of Management, Business, Operations Research Management Science, and Social Sciences Interdisciplinary. Inclusion of other fields delivered inaccurate results. After the removal of duplicates, this search yielded a total of 95 papers (Figure 1).
4. To select the papers, we used two inclusion criteria: (a) papers had to follow Christensen's understanding of disruptive technology (Christensen, 1997) or DI (Christensen et al., 2015), (b) papers had to focus on the DI process (Figure 1). The latter criterion included papers that identified relevant events and actions in the process without applying a process view. We assessed the 95 papers based on abstract and introduction. Whenever a pro-forma citation of DI literature was suspected, the assessment was extended to the theory and method section. This yielded a final sample of 54 papers included in this systematic literature review (see Appendix A).

3.3 | Content analysis

From a process view, we focus on how events and actions emerge, develop, grow and end (Langley, Smallman, Tsoukas, & Van de Ven, 2013), leading to a DI over time. The content analysis identified how the extant literature describes the interconnection of events and actions within the DI process. The coding strategy was based on our theoretical orientation that defined initial coding criteria (Table 2) aligned with the research question (Creswell, 2013).

Once the criteria were established, the coding was facilitated by the software NVivo. The overall coding process was abductive, from

TABLE 1 Search terms for systematic literature review, Web of Science, 1995–2016

Keyword	AND	AND	AND NOT	No. of papers
“disruptive innovat*” OR “disruptive technolog*”	Process		“Production process” OR “Supply chain”	80
	Dynamics			72
	Diffusion			67
	Lifecycle			62
	Evolution		“Supply chain”	68
	“Ex ante”			65
	“Ex post”			63
	“Business model”	Process		63

TABLE 2 Coding criteria

Criteria	Description
Disruptiveness	How is disruptiveness proposed in the reviewed papers?
Occurrence	How do the reviewed papers explain the emergence, development and unfolding of DI over time?
Events and actions	What events and actions are described in the reviewed papers that contribute to the occurrence of DI?

data to theory and vice versa (Saldaña, 2016). Within the first coding cycle, we identified the relevant data segments to be coded (Schreier, 2012). This involved identifying sentences in each paper that provide appropriate insights, and coding the understandings of *disruptiveness*, *occurrence* and *events and actions*.

In the second coding cycle, we sorted the coded data (Saldaña, 2016) into smaller categories to understand the specific elements and dynamics of DI (Figure 2). We classified disruptiveness into *disruptive technology*, *disruptive business model* and *disruptive innovation*. Within occurrence, we identified the DI's *emergence*, its *evolution* and its *end*. Events and actions was coded into *enabling or constraining events and actions*.

Within the third coding cycle, we reorganized and reanalysed the coded data (Saldaña, 2016). This included comparison between codes, quality checks, relations embedded in the data and coherence. Data belonging to two or more codes were adjusted and relations were identified (Schreier, 2012). This led to the identification of sub-themes characterizing the DI process over time (Figure 2). Within disruptiveness, it was identified that papers referred to the *integration of a disruptive technology within a business model*. Within this process, several *disruptive characteristics* were proposed, requiring *strategic actions*. For the occurrence of DI, the phases of *initiation* (implementing technological developments), *niche market* (launch of the business model and subsequent development), and *mainstream market* (commercialization of the business model to mainstream customers) were defined. Further, three *synchronization periods* between technological development and business model development, business model development and niche market, and niche market and mainstream market were identified. These periods refer to the synchronization of events and actions during specific periods in time that were identified as critical for the DI's progression. Within events and actions, the identified enablers and constraints were categorized into *perception and expectation*, *utilization of enabling technologies and factor markets*, and *entrant's strategy*.

4 | FINDINGS

4.1 | Disruptiveness

Our findings show that disruptiveness is characterized by the development of disruptive technologies and their integration within business

First coding	Second coding	Third coding	Example quotes
Disruptiveness	Disruptive business model	Disruptive technology implemented within business model	<p><i>Frequently, business model innovation emerges at a later stage when a once radical or disruptive technological innovation matures and competition through a new business model becomes critical (Habtay, 2012, p.291).</i></p> <p><i>A disruptive innovation underperforms along the dimensions that customers have historically valued and at the same time brings some new performance attributes to the market (Sandström et al., 2014, p.473).</i></p> <p><i>We further propose that value inscription has particular relevance for disruptive digital product innovations and associated business model innovations, which deviate from and threaten existing market conventions and orders (Simmons et al., 2013, p.744).</i></p>
	Disruptive technology		
	Disruptive innovation	Strategic actions	
Occurrence	Emergence	Synchronization 1	<p><i>As performance continues to surpass consumers' requirements, consumers' willingness to pay for improvements decreases, opening the door for lower-priced, lower-performance (disruptive) offers to capture these consumers (Adner, 2002, p.670).</i></p> <p><i>The same goes for other actors in the incumbent's value network, making the introduction of a disruptive innovation a matter of multilateral negotiations with multiple stakeholders that have potentially diverging preferences (Sandström et al., 2014, p.477).</i></p>
	Evolution	Initiation	
	End	Synchronization 2	
		Niche market	
Events and actions	Enabling events and actions	Synchronization 3	<p><i>We therefore, argue that a challenger dependent on another market for complementary products or services – such as a related network infrastructure – is likely to suffer if the complementary market is ill-equipped for the challenger's innovation and unable to serve larger numbers of consumers (Ansari & Krop, 2012, p.1363).</i></p> <p><i>When the entrepreneur who developed the machine tried to license the technology to established health care companies, he couldn't even get his foot in the door. Large-scale X-ray equipment suppliers wanted no part of it. Why? Because it threatened their business models (Christensen et al., 2000, p.103).</i></p> <p><i>Whatever benefits the technology promised was contingent on TiVo being able to gain the support of the very ecosystem incumbents it stood to disrupt, and attaining a critical mass of subscribers for its service (Ansari et al., 2016, p.1845).</i></p>
		Constraining events and actions	

FIGURE 2 Abridged example of coding process

models. These events are interconnected and constitute an essential part of the DI process.

Recent studies show that a *disruptive technology* enables “value creation either by reaching a new performance level in some respect or by simplifying previously used methods” (Heikkilä, Saarni, Kaartemo, & Koponen, 2015, p. 20) when integrated within a business model. Thus, the technology itself is not disruptive—the disruptive character is achieved through capturing the technology within a *business model* (Habtay, 2012; Osiyevskyy & Dewald, 2015). Hence, both a disruptive technology and its subsequent implementation within a business model targeting over-served or unserved customers is required for a DI to emerge.

The business model incorporates the special DI characteristics: a value proposition designed around the “job customers need to get done” (Johnson, Christensen, & Kagermann, 2008, p. 60) in a better way and at a lower cost than existing offers. The value proposition of the business model leads the innovation either towards entering the existing low-end, a new market or the mainstream market (Habtay, 2012).

4.2 | Occurrence

The occurrence of DI in the extant literature is described as a sequence of steps with a focus on early signals and ex ante factors (e.g. Chen, Zhang, & Guo, 2016; Keller & Hüsig, 2009). Our analysis confirms that scholars rarely acknowledge the underlying processes of change to study DI over time from a process view. However, the analysis of the sequence of steps in the extant literature provides

valuable insights for understanding the DI's emergence, development, growth and disruption.

We found that most authors describe: (1) *an initiation phase*, in which a disruptive technology emerges and is incorporated in a business model (emerge); (2) *a niche market phase*, in which the business model grows and develops (grow); and (3) *a mainstream market phase*, which describes the innovation's eventual disruptive effect in an established market (grow and end). From a process view, we focus on the underlying dynamics within each phase. Because of these dynamics, we further propose the term potential DI during the initiation and niche market phases as different paths can be pursued. Although an innovation can possess the characteristic properties of disruption in the beginning, subsequent dynamics can dissuade the innovation from the disruptive path (Ansari, Garud, & Kumaraswamy, 2016; Rafii & Kampas, 2002). This stresses that a focus on the dynamics occurring within the DI process is valuable and necessary in further understanding and managing the phenomenon.

4.2.1 | Initiation phase

The *initiation phase* describes the emergence of a technology and its subsequent integration within a business model. These emerging technologies can be disruptive if they enable the initiation of the DI through integration within a business model that introduces special disruptive characteristics (Chen et al., 2016). A DI introduces an offering that is generally cheaper, easier to use, and more convenient relative to mainstream market offerings and which underperforms on the attributes valued by mainstream customers. The process of identifying disruptive technologies is described as a deliberately initiated,

incremental and inter-institutional process (Bucher, Birkenmeier, Brodbeck, & Escher, 2003). However, the mere availability of these technologies does not create a disruptive innovation per se: in some cases, incumbents use these technologies in a sustaining way (Christensen, Johnson, & Rigby, 2002).

Additionally, we identified that the availability of disruptive and enabling technologies and factor markets facilitate the incorporation of disruptive characteristics by enabling a faster and cheaper entry and development (Downes & Nunes, 2013). Enabling technologies and factor markets are understood as existing resources that allow the entrant to further develop the disruptive characteristics without heavy initial investment. Ansari and Krop (2012) provide an example of digital imaging that diffused widely only once the Internet, e-mailing and home ownership of PCs took off. Without these enabling technologies and factor markets, chances increase that the entrant runs out of resources and fails to commercialize its offering into the niche market in a timely enough manner to achieve disruption.

Our findings suggest that synchronization of disruptive and enabling technologies with a business model offering a targeted value proposition at the low-end or new market characterizes the initiation phase.

4.2.2 | Niche market phase

The initiation phase merges into the *niche market phase* when the innovation is commercialized in the low-end or in a new market (Christensen, Bohmer, & Kenagy, 2000). Niche customers value the innovation's non-standard performance attributes (Huang & Sošić, 2010), thus a DI "sneaks in from below" (Christensen et al., 2000, p. 104). These niche customers are unattractive to incumbents as the niche is without attractive sales potential. Thus, the commercialization into the niche market reduces the risk of an incumbent's attack on the entrant (Hüsig, Hipp, & Dowling, 2005). Additionally, researchers have found niche competition to be much more ruthless than between mainstream market actors (Lawlor & Kavanagh, 2015) as it is unclear which innovation is going to succeed. This competition makes an early following by the incumbent less likely (Hajhashem & Khorasani, 2015).

However, a group of over- or unserved customers is necessary for a successful commercialization of the potential DI into the niche market (Klenner et al., 2013). Thus, the commercialization in the niche market requires an overshooting of niche customers' demands by the incumbents' offerings. When niche customers experience a gap, a vacuum emerges and the entrant should take advantage of it (Christensen et al., 2002; Hüsig et al., 2005). By then, the DI needs to reach a certain performance threshold and provide a targeted value proposition to niche customers (Sandström, Berglund, & Magnusson, 2014). This threshold is defined as "the minimum level of performance below which a customer will not accept a product regardless of its price" (Adner, 2002, p. 671).

If the innovation is successfully launched into the niche market, the entrant subsequently improves the innovation along the new and other performance attributes valued by mainstream customers. Which

performance attributes are improved depends on the entrant's strategy (Chen & Turut, 2013) and the niche customers' demand trajectory (Adner, 2002). Due to resource constraints, the entrant decides whether to focus on improving the new performance attributes or the mainstream's performance attributes (Chen & Turut, 2013), which influences the innovation's future direction.

Through the development of performance attributes, the innovation appeals to an increasing number of customers, which requires a continuous extension of the entrant's value network (Ansari et al., 2016). The DI process demands a constant reconfiguration of the offering to synchronize it to the market (Golobic & Sebastiao, 2011). The entrant's actions gain relevance to strategically influence the synchronization of multiple events, e.g. disclosing information about the innovation, removing information barriers, increasing compatibility between the DI and current market requirements, and demonstrating the relative advantage over other solutions (Hajhashem & Khorasani, 2015). This synchronization of events and actions stresses the possibility of proactively managing and actively shaping the DI's path (Sandström et al., 2014).

4.2.3 | Mainstream market phase

If the entrant improves the innovation's performance attributes, mainstream customers eventually begin to purchase the offering and the innovation continues on the disruptive path. The innovation's adoption by mainstream customers is characterized by the preference overlap of the niche with the mainstream segment and the subsequent intersection of the DI's supply trajectory with mainstream customers' demand trajectory (Hüsig et al., 2005). Here, the DI begins to displace the incumbents' business model on the mainstream market and disruption occurs (Adner, 2002).

For an undisturbed entry into the mainstream market, incumbents need to overshoot the performance that mainstream customers can utilize and thereby open a window for disruption (Christensen et al., 2000, 2002), creating a temporary asynchrony and presenting the entrant with an opportunity to implement its offering without major disturbance from the incumbents (Hajhashem & Khorasani, 2015). However, during the *mainstream market phase*, some reaction from the incumbent and other actors can be expected. The entrant is required to minimize and survive this reaction to eventually disrupt the market, through strategically managing the perception and expectation of the incumbent and other actors (Lawlor & Kavanagh, 2015). Ansari et al. (2016) and Marx, Gans, and Hsu (2014) provide examples of moving from a disruptive to a cooperative strategy to gain the support of the market actors the entrant stood to disrupt.

Our findings suggest that the disruptive path is manageable by the entrant through synchronizing actions with events, according to the disruptive characteristics of their offering. Along the three phases, asynchronies need to be identified and managed in a timely manner by the entrant, e.g. availability of technologies, factor markets, incumbents' reactions, and customers' needs.

4.3 | Events and actions

Within the process, events occur that can be strategically managed by the actors. Actors are the protagonist (entrant) driving the innovation along a disruptive path and the antagonist (incumbent) reacting to the protagonist's actions, eventually aiming to dissuade the innovation from the disruptive path. Both actors are necessary for a DI and the path of each is influenced by the actions of the other. We found that the events and actions result from and are shaped by: (1) the *perception and expectation* of the opportunity and the entrant's innovation, (2) the *entrant's strategy*, and (3) the *utilization of enabling technologies and factor markets*.

4.3.1 | Perception and expectation

Perception and expectation refer to how the entrant and other niche and mainstream market actors regard the opportunities surrounding their markets and the entrant's innovation; this affects the behaviour of the actors involved and influences the entrant's management of the innovation. It is essential at certain times that the incumbent does not perceive the new offering either as an opportunity or as a threat and remains inactive. Dewald and Bowen (2010) identified that incumbents take little or no action when they perceive little or no threat from the entrant's business model and further anticipate little or no opportunity. The incumbent generally has the resources and capabilities to dissuade the entrant's approach, thus the entrant needs to stay under the radar (Rafii & Kampas, 2002), strategically managing the incumbent's perception to minimize negative reactions and to remain on the disruptive path. Lawlor and Kavanagh (2015) analyse the stent actor-network dynamics during marketization and show how entrants were able to integrate themselves into the existing market through aligning their interests with relatively less powerful actors within the established network. Ansari et al. (2016) showed that the change towards a more collaborative mindset eventually led the entrant to emphasize the innovation's beneficial aspects and thus led the incumbents to perceive the DI as a sustaining innovation, thereby mitigating tensions.

4.3.2 | Entrant's strategy

Our findings show that the entrant can strategically manage the innovation over time along a disruptive path. We understand the *entrant's strategy* as a purposeful choice of actions towards achieving a continuous fit with the environment to disrupt the mainstream incumbents. The entrant continuously reconfigures the innovation by scanning the local and distant environment for a timely synchronization of events and underlying processes. Bucher et al. (2003) show that new entrants in the Swiss nanotechnology industry relied on scanning routines that identified new technologies within the local and distant environment, eventually achieving a timely synchronization of technological supply and market demand.

Once a disruptive opportunity is identified, it is addressed through the targeted development of a business model, which identifies and

exploits gaps in the market by addressing the needs of unserved or low-end customers (Osiyevskyy & Dewald, 2015). Previous research reflects the importance of being aware of the asynchronies within the customers' demand trajectories (Adner, 2002; Bucher et al., 2003). A vacuum in the niche market should be exploited through a targeted value proposition (Christensen et al., 2002). This value proposition is reciprocal: how the firm decides to inscribe value and to communicate this value influences the tensions arising during the DI's subsequent commercialization.

Within the niche market, the entrant incrementally improves the innovation (Klenner et al., 2013) moving it along the disruptive path. The entrant needs to pursue market credibility, show its superiority over existing offerings in the niche, build its supply chain capabilities, and continuously refine its value proposition (Hajhashem & Khorasani, 2015; Heikkilä et al., 2015; Lawlor & Kavanagh, 2015). Further, the entrant eventually engages with an expanding periphery of partners to meet the demand from an increasing number of customers (Golicic & Sebastiao, 2011). This might include cooperation with the incumbents the entrant stands to disrupt (Ansari et al., 2016; Marx et al., 2014). In any case, the entrant's mainstream launch alerts the incumbents and a confrontation can be expected (Samavi, Yu, & Topaloglou, 2009). The incumbent can display limited hostility or meet the competition head on, depending on the entrant's and the innovation's positioning. The entrant should minimize this competitive reaction to successfully disrupt the market (Ansari et al., 2016). Thus, to remain on the disruptive path, the entrant is continuously adapting its strategy to encompass a dynamically changing and competitive environment.

4.3.3 | Utilization of enabling technologies and factor markets

Our findings show that *enabling technologies and factor markets* support the DI's progress. Enabling technologies refer to developed technologies freely available within the environment, e.g. platform innovations that build on available components (Downes & Nunes, 2013). Factor markets refer to human resources with the capability to work with and further develop these enabling technologies, e.g. allowing an exchange of or access to knowledge (Hajhashem & Khorasani, 2015), thereby further accelerating the DI's development (Downes & Nunes, 2013).

Although enabling technologies and factor markets facilitate the innovation's progression, they were found to be especially relevant during the initiation phase. The entrant can benefit from external developments and decrease the resource investment necessary to move along the disruptive path (Downes & Nunes, 2013), freeing resources for synchronizing endogenous and exogenous conditions. If the required enabling technologies are unavailable, due to a delay in development or patent protection, an innovation's progression along the disruptive path at that point in time is unlikely (Habtay, 2012). Hence, we found that the entrant has difficulties to muster the resources to develop in-house and simultaneously increase the speed of innovation when necessary.

Ansari and Krop (2012) refer to Apple's successful commercialization of iTunes and the iPod, which eventually disrupted the music industry, once regulations changed, the music content owners began to offer MP3 music online, and the Internet and MP3 players were sufficiently developed.

In summary, the entrant is required to achieve legitimacy within the market and develop the innovation in a timely manner to eventually disrupt. This requires the entrant to strategically manage the perceptions and expectations of actors surrounding the DI through, e.g., inscribing value to the business model in a way that appeals to the low-end or a new market, communicating competitively to show its relative superiority or cooperatively to reduce competitive tensions, and to secure cooperation with network partners. Further, the DI's development depends on the timing of underlying processes, such as the development of enabling technologies and factor markets, the

overshoot of customer demands, or the availability of network partners. Hence, certain events require strategy adjustments that, if not purposefully conducted, could dissuade from the disruptive path.

Our findings suggest the necessity to proactively manage and shape the DI's path through a continuous synchronization of events and actions, shaped by the interaction of the actors involved and the alignment of enabling technologies and factor markets.

5 | DISCUSSION

From our findings of disruptiveness, occurrence, and events and actions, we conclude that the DI's process can be managed and that it follows various paths towards disruption (see Figure 3). The DI process,

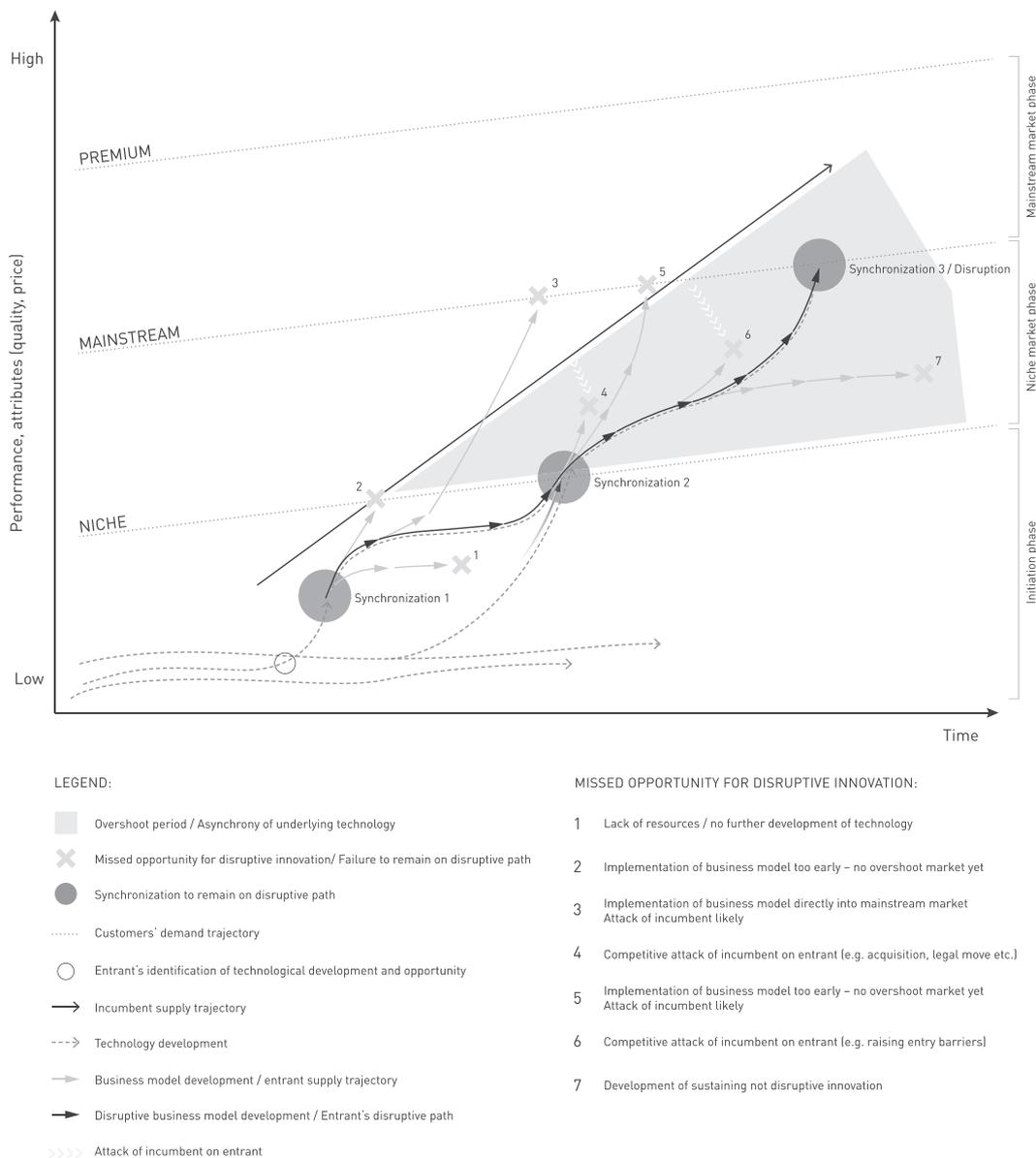


FIGURE 3 Paths for DI

upon initiation, proliferates into multiple, divergent progressions, depending on the inherent dynamics in each phase (Van de Ven, 2017).

Figure 3 synthesizes the previous findings and shows that initially, several events occur that set the stage for new entrants to initiate an innovation. These events refer to the development of technologies that enable a DI, through their subsequent integration within a business model with the disruptive characteristics of being generally cheaper, simpler, more convenient, and offering a lower performance relative to mainstream market offerings, thereby creating value that appeals to niche market customers (Synchronization 1). During this time, the targeted niche customers must experience a gap between their demand and the incumbents' offering, and the entrant's innovation must reach a performance level high enough to appeal to these customers (Synchronization 2). Thus, the entrant targets the offering at a time when niche customers are searching for alternatives. If the disruptive technology does not develop at a similar tempo, the entrant runs out of resources or enters the niche market too early, asynchronies dissuade from the disruptive path ("missed opportunities 1 and 2"). If the entrant achieves a synchronization and launches into a niche market, subsequent improvements require management of perceptions and expectations of the incumbent and other actors to reduce any reactions that could potentially dissuade from the disruptive path ("missed opportunities 4 and 6"). Eventually, for the innovation to enter the mainstream market, customers need to experience a gap between their demands and the incumbents' offering (Synchronization 3). If this overshoot market does not exist and the entrant commercializes its innovation into the mainstream market too early, this will likely elicit a competitive response from incumbents ("missed opportunity 3 and 5"). Further, other dynamics can evolve that divert the innovation from the disruptive path, for example when the entrant is dependent on cooperation with incumbent leaders (Ansari et al., 2016; Marx et al., 2014) ("missed opportunity 7").

The identification of "missed opportunities" is not intended to propose only one path for disruption, it is rather revelatory in showing how multiple paths emerge due to the perception and expectation of the opportunity and the entrant's innovation, the availability of enabling technologies and factor markets, and the entrant's strategy. The entrant continuously interacts with and reacts to several actors and depends upon the timing of underlying processes to synchronize events and actions in a timely manner to progress along the disruptive path.

Hence, from this proliferation of paths, we conceptualize the DI process as being shaped through inherent dynamics characterized by: (1) the *timing of entry and underlying processes*, which influences (2) the *synchronization of events and actions* and is shaped by (3) the *adaptability of strategic actions*.

5.1 | Timing of entry and underlying processes

We propose the concept of timing to show that specific actions and events are required to enable progression along the disruptive path. We identified that the *timing of the innovation's entry and underlying processes* influence the creation and subsequent utilization of

opportunities for disruption, e.g. launching an innovation once a window for disruption is opening in the niche and mainstream markets. Within the literature on innovation management, the concept of timing is known through "first mover" and "fast-follower advantages" (Lieberman & Montgomery, 1998). However, the importance of timing in the DI process does not relate to being first or second but rather being timely. Thus, we understand the timing of entry as the timeliness of launching the innovation to the niche and mainstream market, once incumbents overshoot customers' needs, utilizing enabling technologies and factor markets that facilitate a targeted value proposition.

We further propose the timing of underlying processes, understood as the multiple tempos of developments that underlie the DI process. The availability of underlying processes (e.g. enabling technologies and factor markets) was shown to positively impact the time/cost trade-off for a timely development (Gupta & Wilemon, 1990). The unavailability of such underlying processes could inhibit the entrant from taking advantage of the window for disruption, as it was found that entrants often lack the necessary resources to develop everything in-house (Christensen et al., 2018).

5.2 | Synchronization of events and actions

We propose the concept of *synchronization* to show that events and actions within the DI process need to align during certain periods in time to allow a DI's progression. We understand synchronization as the coincidence of events and actions necessary for the innovation to progress along the disruptive path, e.g. the availability of enabling technologies, the emergence of a vacuum at the low-end of the market, the entrant's utilization of these technologies, and the inscription of value targeted at the low-end or new market customers. If a synchronization of events and actions is not achieved, the innovation might dissuade from the disruptive path, thus the entrant might miss an opportunity for disruption (Figure 3, "missed opportunities for DI"). We thus stress the specific internal and external pacing that recognizes different tempos inherently co-existing in the process (Garud et al., 2017). The different tempos could create asynchronies that slow down or bring the DI's progression to a halt (Figure 3) (Christensen et al., 2018; Garud et al., 2017).

Through acknowledging these co-existing multi-tempos, the presence of *synchrony*, *asynchrony*, and *diachrony* characterize the DI process (Garud et al., 2017). We found evidence that *synchrony* between the existence of enabling technologies and the entrant's offering speeds the progression on its disruptive path. *Synchrony* is represented in Figure 3 by the merging and parallelism of the DI's path and the technology development. *Asynchrony* refers to, for example, the misalignment between the incumbents' offering and the demand of the niche customers, creating a vacuum that the entrant can fill (Adner, 2002), represented in Figure 3 by, for example, the overshoot period. *Diachrony* is represented by the initial stagnation of the business model development (Figure 3, "missed opportunity 1"), which subsequently gathers pace due to the availability of an enabling technology (Figure 3). The existence of enabling technologies and markets,

in particular, stresses diachrony within the process. An idea might not be valuable due to a lack of enabling technologies, but when these technologies emerge, the idea can progress (Garud et al., 2017).

5.3 | Adaptability of strategic actions

The alternative paths that dissuade the entrant from the disruptive path (i.e. "missed opportunities") reflect the necessity for the entrant's *strategic actions* to synchronize endogenous and exogenous conditions to remain on the disruptive path. Our analysis reveals the need to "mix and match" multiple strategies in a timely manner to develop and manage an innovation towards disruption (Nagy, Schuessler, & Dubinsky, 2016). This can be visualized as a set of strategic actions or patterns of decisions (Murray, 1984) that are applied to create certain events or as a response if certain events occur along the innovation's path.

We define *adaptability of strategic actions* as the entrant's ability to act smoothly, flexibly and purposefully to continuously achieve a fit with the environment, so as to remain on a disruptive path. The deployment of this set of strategic actions in a purposeful and timely manner requires a continuous sensing of technological developments, complementary factor markets, customer demands, and incumbents' and other actors' perceptions and expectations. Based on the identification of new opportunities and threats arising from the environment (Murray, 1984) and the learning from past actions, the entrant is able to quickly and purposefully react (Mintzberg & Waters, 1985). Thus, the entrant deploys the necessary actions and reconfigures the business model to achieve a timely synchronization (Danneels, 2011) through interacting with market actors achieving the DI's progression.

In summary, we propose that the DI process is shaped by the dynamics that evolve due to the timing of entry and underlying processes, synchronization of events and actions, and adaptability of the entrant's strategy. These dynamics allow for a proliferation of innovation paths, in which only the appropriate alignment, integration and decisions would progress into disruption. Thus, the entrant can steer its innovation along the disruptive path through reading the environment and managing the above-mentioned characteristics over time.

6 | CONCLUSION

We have identified that the extant literature describes the interconnections of events and actions leading to a DI as a sequence of steps, overlooking the underlying dynamics of the DI process. Based on our findings, we propose a dynamic dimension to the DI process by integrating existing findings with a process view. We identified a proliferation of the innovation's path in which events, and actions shape the temporal dynamics that lead to disruption. Our findings show that these temporal dynamics can be managed by the entrant so the process of DI can be understood "not in terms of *navigation* but in terms of *wayfinding*" (Nayak & Chia, 2011, p. 299).

We contribute to DI literature in three ways. First, we demonstrate how the process view provides a dynamic understanding of DI by integrating existing findings on events and actions leading to a disruptive

effect over time. Our findings suggest that the DI process occurs within three phases: the initiation phase, the niche market phase and the mainstream market phase, with (1) the perception and expectations of the opportunity and the entrant's innovation, (2) the entrant's strategy and (3) the utilization of enabling technologies and factor markets influencing the dynamics characterizing each phase. Second, we articulate these findings into a process model, acknowledging multi-temporal dynamics inherent to the process, revealing a proliferation of alternative paths that could dissuade away from a disruptive path (illustrated as "missed opportunities of DI") when not appropriately managed. Third, by understanding DI as a dynamic progression, we propose the process in terms of (a) the timing of entry and underlying processes that influences (b) the synchronization of events and actions, shaped by (c) the adaptability of strategic actions.

The dynamics within the DI process underline the importance of synchrony, asynchrony and diachrony (Garud et al., 2017) for a more comprehensive understanding of the process. The DI process is shaped by the entrant, the incumbent and other market actors through a continuous interaction that influences the synchronization of actions and events necessary to remain on a disruptive path. For this synchrony, the entrant's actions gain relevance in managing the timing of entry, aligning it with the tempo of underlying processes (e.g. enabling technologies and factor markets, the incumbent's and other market actors' perceptions and expectations, and the customers' demand trajectory) to influence whether the innovation becomes disruptive, takes another shape (e.g., sustaining the mainstream market), or is stopped during an earlier phase. Thus, the continuous sensing of the environment, the seizure and adaptation of the offering become necessary for a timely synchronization to progress along the disruptive path.

We conceptualize the DI process as being shaped by the continuous interplay of the entrant's actions, the incumbent's (re-)actions, and events within the external environment: the entrant emerges as the focal actor, developing and growing the disruptive innovation over time; however, events within the environment and actions performed by the incumbent and other actors shape the entrant's path.

For entrants, we contribute to an understanding of the characteristics that shape the DI path (e.g. adaptability of strategic actions, focus on the importance of timing and synchronization). For incumbents, we contribute to an understanding of the dynamics that shape the path and can be used to dissuade the entrant from it (e.g. influencing the timing of underlying processes by offering to the low-end/new market, closing the "overshoot" gap, or making technologies unavailable through patent protection).

We additionally identify avenues for further research. Our findings stress that the innovation's disruptive characteristics in the beginning do not necessarily lead to a disruptive effect but that it is the dynamics "in between", shaped by the entrant, the incumbent and other actors, that decide the innovation's final effect on the mainstream. This is additionally illustrated in the several "missed opportunities for DI", reflecting a proliferation of paths and the importance of the synchronization of events and actions. However, most of the reviewed papers focus on how a DI gains a foothold and on the overlap between the niche and the mainstream markets. The dynamics occurring during

the DI's unfolding lack explanation. We call for research from a process view to further explore the roles of timing, synchronization and adaptability of strategy for identifying and managing DI and to consider additional elements that shape the process. We propose further research from these perspectives to explore the dynamics inherent to the DI process.

Further, we propose to explore the role played by environmental conditions, such as governmental regulations or other types of institutional pressure. These conditions have been proposed by Sandström et al. (2014) to influence and to be influenceable by the actors involved in the DI process, acting as enablers or constraints within the process or inhibiting the DI's emergence altogether (Christensen et al., 2018). We suggest research on how entrants and incumbents manage these conditions within the DI process (e.g. ignoring them, circumventing them, using them to influence timing).

Further, we propose to differentiate between types of industries and the role that a digital environment or a physical environment plays for DI. Although we referred to underlying processes that carry enabling technologies and factor markets and thereby influence the DI's path, we did not explore their role with reference to particular industries. Christensen et al. (2018) in their review on DI theory suggest that "disruption does not happen everywhere, nor does it play out at the same pace across industries" (p. 23). We suggest further research to explore the "disruptive susceptibility" (i.e. the market's readiness for DI) (Klenner et al., 2013) of markets and how this is shaped by timing, synchronization and strategic actions.

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APPENDIX A

Authors in systematic review and study focus

Author(s) and year	Research strategy	Research design	Industry	Perspective	Process part	Themes from discussion
Adner (2002)	Quantitative	Computer simulation	Hard disk drive industry	Customer	Synchronization 2 Niche market Synchronization 3	Timing Synchronization Adaptability of strategy
Ansari et al. (2016)	Qualitative	Longitudinal case study	Personal video recorder industry	Entrant	Niche market Synchronization 3 Mainstream market	Synchronization Adaptability of strategy
Ansari and Krop (2012)	Qualitative	Longitudinal case study	Dutch television industry	Incumbent & Entrant	Synchronization 2 Niche market Synchronization 3 Mainstream market	Timing Adaptability of strategy
Bower and Christensen (1995)	Review	Review	Hard disk drive industry	Incumbent	Initiation Synchronization 2 Niche market	Timing Synchronization
Brown and Anthony (2011)	Quantitative	Case study	Consumer goods manufacturing industry	Incumbent	Niche market	
Bucher et al. (2003)	Qualitative	Case study	Nanotechnology	Technology	Synchronization 1 Initiation Synchronization 2	Timing Adaptability of strategy
Bucher, Eisert, and Gassmann (2012)	Quantitative	Multiple case studies	Several industries: banking, automotive, insurance, weather, measuring & control technology, charity, ICT security services, chemical	Incumbent & Entrant	Niche market Synchronization 3	Timing Synchronization
Chen et al. (2016)	Quantitative	Empirical analysis using supply-based model	Several industries: hard disk drive industry, semiconductor industry, CPU for mobile devices	Incumbent & Entrant	Synchronization 1 Initiation Synchronization 2 Niche market Synchronization 3	Timing Synchronization
Chen and Turut (2013)	Quantitative	Empirical analysis based on subgame perfect Nash equilibrium of the game	Not industry specific	Customer	Synchronization 2 Niche market	Synchronization Adaptability of strategy
Christensen et al. (2000)	Review	Review	Health industry	Incumbent	Niche market Synchronization 3 Mainstream market	Timing Synchronization

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Author(s) and year	Research strategy	Research design	Industry	Perspective	Process part	Themes from discussion
Christensen et al. (2002)	Review	Review	Printing industry	Incumbent	Synchronization 1 Initiation Synchronization 2 Niche market	Timing Synchronization Adaptability of strategy
Cowan (2013)	Qualitative	Case study	Smart grid industry	Technology	Initiation Niche market	Timing
Danneels (2011)	Qualitative	Case study	Typewriter industry	Incumbent	Synchronization 2 Niche market Synchronization 3	Synchronization Adaptability of strategy
D'Aveni (2002)	Review	Review	Not industry specific	Incumbent	Niche market	Timing Synchronization
Dedrick, Venkatesh, Stanton, Zheng, and Ramnarine-Rieks (2015)	Qualitative	Case study	Smart grid industry	Incumbent	Initiation Niche market	Synchronization
Dewald and Bowen (2010)	Quantitative	Case study	Real estate industry	Incumbent	Synchronization 1 Initiation Synchronization 2 Niche market Synchronization 3	Timing Synchronization Adaptability of strategy
Dos Santos Paulino and Le Hir (2016)	Qualitative	Case study	Satellite industry	Incumbent & Entrant	Initiation Synchronization 2 Niche market	Timing Synchronization
Downes and Nunes (2013)	Review	Review	Not industry specific	Incumbent & Entrant	Synchronization 1 Initiation Synchronization 2 Niche market Synchronization 3	Timing Synchronization Adaptability of strategy
Droege and Johnson (2010)	Qualitative	Case study	Aircraft industry	Entrant	Synchronization 2 Niche market Synchronization 3	Synchronization Adaptability of strategy
Gilbert and Bower (2002)	Review	Review	Newspaper industry	Incumbent	Initiation Synchronization 2 Niche market Synchronization 3	Timing Adaptability of strategy
Goldsby and Zinn (2016)	Editorial	Editorial	Not industry specific	Technology	Synchronization 1 Synchronization 2 Niche market	Timing Synchronization
Golicic and Sebastiao (2011)	Qualitative	Multiple case studies	Several industries: genetics, agriculture, medical, computing technology,	Entrant	Niche market Synchronization 3 Mainstream market	Synchronization Adaptability of strategy

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Author(s) and year	Research strategy	Research design	Industry	Perspective	Process part	Themes from discussion
Habtay (2012)	Qualitative	Longitudinal case studies	manufacturing, education, energy, engineering, information technology, automotive Several industries: ICT, mobile, airline, and insurance industries	Entrant	Synchronization 1 Initiation Synchronization 2 Niche market Synchronization 3	Timing Adaptability of strategy
Hajhashem and Khorasani (2015)	Qualitative	Longitudinal case study	Medical devices industry	Incumbent & Entrant	Synchronization 1 Initiation Synchronization 2 Niche market Synchronization 3	Timing Synchronization Adaptability of strategy
Hang, Chen, and Yu (2011)	Conceptual	Conceptual	Several industries: e.g., steel, disk drive industry, mobile system/phone, web-based application	Incumbent & Entrant	Synchronization 1 Initiation Synchronization 2 Niche market Synchronization 3	Timing Adaptability of strategy
Heikkilä et al. (2015)	Qualitative	Case study	Health care	Market	Synchronization 1 Initiation Synchronization 2 Niche market	Timing Synchronization Adaptability of strategy
Huang and Sošić (2010)	Quantitative	Empirical analysis based on deterministic game model	Not industry specific	Incumbent & Entrant	Synchronization 1 Initiation Synchronization 2 Niche market Synchronization 3	Adaptability of strategy
Hüsig et al. (2005)	Qualitative	Case study	Mobile communication industry	Incumbent	Synchronization 1 Initiation Synchronization 2 Niche market Mainstream market	Timing Synchronization Adaptability of strategy
Hynes and Elwell (2016)	Qualitative	Case study	Mobile communication industry	Technology	Synchronization 1 Initiation Synchronization 2	Timing Synchronization
Johnson et al. (2008)	Review	Review	Not industry specific	Incumbent	Synchronization 1 Initiation Synchronization 2 Niche market	Timing Synchronization
	Qualitative	Multilevel discourse analysis	Computer industry	Entrant	Synchronization 2	Timing

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Author(s) and year	Research strategy	Research design	Industry	Perspective	Process part	Themes from discussion
Kahl and Grodal (2016)					Niche market Synchronization 3	Synchronization Adaptability of strategy
Keller and Hüsig (2009)	Qualitative	Case study	Web applications	Incumbent & Entrant	Synchronization 1 Initiation Synchronization 2 Niche market Synchronization 3	Timing Synchronization Adaptability of strategy
Klenner et al. (2013)	Qualitative	Longitudinal case study	Camera industry & automobile industry	Market	Initiation Synchronization 2 Niche market	Timing Synchronization Adaptability of strategy
Lange, Bovie, and Henderson (2009)	Quantitative	Event history modelling	PC industry	Incumbent & Entrant	Initiation Synchronization 2 Niche market	Timing Synchronization Adaptability of strategy
Lawlor and Kavanagh (2015)	Qualitative	Longitudinal case study	Medical industry	Market	Niche market Synchronization 3 Mainstream market	Timing Synchronization Adaptability of strategy
Lee, Phaal, and Lee (2011)	Quantitative	Cross-sectional study	Several industries, e.g.: electronics, heavy industry, chemicals, communication, and information technology	Incumbent	Initiation Synchronization 1	Timing
Linton and Walsh (2008)	Qualitative	Conceptual	Nanotechnologies & other emerging technologies	Technology	Initiation Niche market	Adaptability of strategy
Liu, Xie, and Wu (2015)	Qualitative	Case study	Mobile phone industry	Incumbent	Synchronization 1 Initiation	Timing
Martin-Rios and Parga-Dans (2016)	Qualitative	Multiple case studies	Creative industries (Archaeology)	Entrant	Synchronization 2 Synchronization 3	Timing
Marx et al. (2014)	Qualitative	Case study	Automated speech recognition industry	Entrant	Synchronization 2 Niche market Synchronization 3	Timing Synchronization Adaptability of strategy
Nagy et al. (2016)	Quantitative	Conceptual	3D-printing industry	Market	Synchronization 2 Niche market	Timing Adaptability of strategy
Obal (2013)	Quantitative	Cross-sectional case study	Software-as-a-Service	Customer	Niche market Synchronization 3	Adaptability of strategy
Obal and Lancioni (2013)	Conceptual	Conceptual	Information technology industry	Incumbent & Entrant	Initiation Niche market	Timing Adaptability of strategy
O'Reilly and Tushman (2004)	Review	Review	Not industry specific	Incumbent	Initiation Niche market	Timing Synchronization
Osiwskyy and Dewald (2015)	Quantitative	Cross-sectional case study	Real estate brokerage industry	Incumbent	Synchronization 1 Initiation	Timing Synchronization

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Author(s) and year	Research strategy	Research design	Industry	Perspective	Process part	Themes from discussion
Padgett and Mulvey (2007)	Quantitative	Case study	Brokerage industry	Incumbent	Synchronization 2 Niche market	Adaptability of strategy
Pereira, Imbrizi, Goncalves de Freitas, and Alvarenga (2015)	Qualitative	Case study	Airline industry	Entrant	Initiation Niche market	Synchronization Adaptability of strategy
Rafii and Kamps (2002)	Conceptual	Conceptual	Not industry specific	Incumbent	Synchronization 2 Synchronization 3 Mainstream market	Timing Synchronization Adaptability of strategy
Reinhardt and Gurtner (2015)	Quantitative	Cross-sectional study	Not industry specific	Customer	Synchronization 2 Niche market	Synchronization
Roy and Sarkar (2016)	Quantitative	Cross-sectional case study	Industrial robotics industry	Incumbent	Synchronization 1 Synchronization 2 Niche market	Timing
Samavi et al. (2009)	Conceptual	Conceptual	Telecommunication industry	Incumbent	Synchronization 2 Niche market Synchronization 3	Adaptability of strategy
Sandström et al. (2014)	Conceptual	Conceptual	Not industry specific	Incumbent & Entrant	Initiation Synchronization 2 Niche market Synchronization 3 Mainstream market	Synchronization Adaptability of strategy
Simmons, Palmer, and Truong (2013)	Qualitative	Case studies	Several industries: IT, Telecommunication, Advertising, Media, Retail, TV industry	Incumbent	Initiation Synchronization 2 Niche market Synchronization 3	Synchronization Adaptability of strategy
Valdez-de-Leon (2016)	Conceptual	Conceptual	Telecommunication industry	Incumbent	Initiation Niche market	Timing