From Disruptive Technology to Disruptive Business Model Innovation: In Need for an Integrated Conceptual Framework

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Abstract

Recently, scholars have conceptualized disruptive innovation as a function of conflict between the entrant’s and incumbent’s business models, not only an outcome of technological change. This conceptualization requires examination of disruptive phenomenon from both the innovator and incumbent’s perspectives. However, extant research mainly examines this problem from incumbent’s perspective. Drawing on the literature of disruptive innovation, business model innovation and entrepreneurship, this study proposes a hierarchically linked two phased conceptual models to analyse disruption from both the entrant’s and incumbent’ perspectives.

Taking the entrant’s perspective, the results of the first model show that a potentially disruptive niche market is an outcome of (a) an initially substandard value propositions viewed from incumbents managers’ customer orientation, (b) asymmetric strategic orientations between the entrant and the incumbent, (c) the entrant’s differential value chain configurations, (b) the entrant’s emergent innovation capabilities, (d) enter-entrants competition and (e) mainstream entry barriers. Considering the incumbent’s standpoint, the second phase model tests the effects of (a) capabilities mismatch between the entrant and the incumbent, (b) asymmetric incentive systems, and (c) incumbents’ managerial dilemma on disruptive innovation. The results reveal that a potentially disruptive niche market only becomes disruptive if conditions of (a) asymmetric incentive systems and (b) incumbents’ managerial dilemma are present. (c) Capabilities misfit does not seem to affect disruptive innovation. Theoretical and managerial implications are discussed.

Key Words: Disruptive technology, Disruptive Business Model Innovation, Niche Market, Asymmetric Cognitive Orientations, Asymmetric Incentives.
Introduction

Evolutionary theories generally depict a continuously changing business environment at times punctuated by discontinuous shifts (Tushman and Anderson, 1986; Dosi, 1982; Nelson and Winter, 1982). While established firms are generally capable to adapt their organizations to continuously changing environments, they often encounter difficulties dealing with discontinuous changes. Incumbents’ success or failure to adapt their organizations to discontinuous innovation was attributed to timing of entry (Mitchell, 1991), firm size and scale (Suarez and Utterback, 1995), engineering and technical capabilities misfit (Hill and Rotharmel, 2003; Henderson and Clark, 1990; Tushman and Anderson, 1986; Dewar and Dutton, 1986), path dependency (Nelson and Winter 1982), co-evolutionary ‘fit’ or lock-in (Siggelkow, 2002; Burgelman, 2002), embedded managerial strategic orientation (Prahalad and Bettis, 1995) and structural inertia (Hannan and Freeman, 1984, Leanoard-Barton, 1992).

These studies offered rich typologies for distinguishing between technological innovations that could enhance existing performances and innovations and that could cause problems to incumbents.¹

By drawing on the resource-base dependency theory (Pfeffer and Salancik, 1978), Christensen’s (1997) brought in a different perspective. By distinguished between sustaining and disruptive innovations, he argued that established firms can manage radical or competence destroying technological innovation despite the difficulties and risks involved. Sustaining innovations may contain incremental and radical innovations that evolve along the incumbent’s established trajectory, which existing customers will value. In contrast, disruptive innovation typically underperforms in mainstream markets compared to the established product, but it has other features that new and low-end customers value. After

¹ Technology based categorizations include, among others, incremental vs. radical innovations (Dewar and Dutton, 1986), competence-enhancing discontinuities vs. competence-destroying discontinuities (Tushman and Anderson, 1986) and modular vs. architectural innovation (Henderson and Clark, 1990).
growing a niche market over time, a disruptive innovation displaces the mainstream market of incumbents by moving up-market through a fundamentally different performance trajectory (Christensen and Raynor, 2003).

Recent empirical studies supported Christensen’s (1997) argument that incumbents can manage radical technological innovation successfully but stumble with disruptive innovation (Govindarajan, Kopalle and Danneels, 2011; Zhou, Yim, and Tse, 2005). The reasons are that the disruptive impact of radical innovation on existing capabilities tends to be obvious when it emerges and trigger the need for transformation (Henderson and Clarck, 1990), and most importantly, because it appeals to incumbent’s existing customers (Govindarajan et. al., 2011). Taking this view, scholars have further advanced disruptive innovation theory by showing that disruptive innovation is a business model problem, not only a technology problem (Chesbrough, 2010; Christensen, 2006; Markides, 2006). This definition has extended the power of the theory to explain different types of disruptive innovations across a wide range of industries (Schmidt and Druehl, 2008; Slater and Mohr, 2006; Walsh, 2002).²

However, although disruptive innovation is viewed as a business model problem (Chesbrough, 2010; Christensen, 2006; Markides, 2006), the lack of widely agreed upon definition of the concept of a business model (Markides, 2008) makes the concept of disruptive business model innovation a topic that warrants further research. By definition, there are at least three types of actors involved in disruption, the entrants, the incumbents and the customers. A business model approach to innovation considers all aspects of innovation processes and business activities for developing or responding to disruptive innovation, as opposed to a technology solution alone. However, extant research mainly focuses on problems facing incumbents (Markides and Charitou, 2004; Christensen and Raynor, 2003).

² Consequently, disruptive innovation theory has made a profound effect on academics and practitioners in understanding incumbents’ upheaval in face of discontinuous changes (Schmidt and Druehl, 2008; Danneels, 2004). While Christensen’s (1997) work has generated extensive research, the recent shift of research focus from a technology to a business model change raises one major issue that needs more attention.
Thus, conceptualizing disruptive innovation as a function of conflict between the entrant’s and incumbent’s business models requires examination of disruptive phenomenon from both the innovator and incumbents’ perspectives.

Therefore, the purpose of this study is to analyze disruptive innovation from a business model perspective in terms of the relation between the entrants and the incumbents. This study aims to make three contributions. First, business model innovation research mostly takes an entrepreneurial perspective to study firm’s innovation processes in developing new business models (McGrath, 2010; Osterwalder and Pigneur, 2009; Magretta, 2002). But disruptive innovation research begins where these studies “end” and takes a normative perspective to understand and address incumbents misfortune in face of disruptive innovation (Christensen and Raynor, 2003; Gilbert and Bower, 2002). By drawing on business model and disruptive innovation literature and systematically linking the two concepts, this paper models the evolution and development of disruptive business model innovation by bringing the two perspectives together.

Second, disruptive innovation theory views a market change as an antecedent of the disparity between the disruptive and sustaining markets’ trajectories (Gilbert, 2003; Christensen and Raynor, 2003). Beyond this explanation, this study shows how asymmetric managerial cognitive orientations between the entrant and the incumbents’ managers can inform this disparity during the early stage of the innovation. Third, by systematically unpacking the differential effects of capabilities, incentive systems and managerial cognition as underlying mechanisms of disruptive innovation, this study exposes the degree and magnitude of each of this effect on disruptive innovation.
What is a business model?

Although there seems no widely agreed upon definition of a business model and its distinct components (Markides, 2008), at a basic level, scholars do agree that the concept of a business model concerns with how a firm creates value for customers and how it captures some of the value (Teece, 2010; Morris, Schindehutte and Allen, 2005; Magretta, 2002). Chesbrough and Rosenbloom (2002) identified ten interrelated components of a business model whereas Osterwalder and Pigneur (2009) proposed nine business elements. Integrating earlier works, Al-Debei and Avison (2010) offered a theoretical framework defining value proposition, value architecture, value finance and value network as four higher layer dimensions with sixteen lower layer operational elements. As a theoretical framework, it consists of complex, granular, dynamic and reciprocally reinforcing components or business model elements (Al-Debei and Avison, 2010).

Building on these definitions and integrating entrepreneurship and disruptive innovation literatures, Figure 1 depicts a business model concept with five major components and subsequent operational elements. These will be discussed in turn.

Figure 1: A Business Model Concept
A business model innovation often begins with the discovery of (first element) viable customer value propositions (McGrath, 2010; Afuah and Tucci, 2001) for a (second element) specific customer segment (Osterwalder and Pigneur, 2009; Shafer, Smith, and Linder, 2005) by configuring a (third element) value network for creating and delivering the customer value (Zott and Amit, 2010; Chesbrough and Rosenbloom, 2002). Research shows how a new business model can result by reinventing systematically across these three dimensions of a business model, specifically by radically changing the established value propositions, redefining the existing customer base, deconstructing traditional value network and altering the firm’s role in the existing value chain (Magretta, 2002; Govindarajan and Gupta, 2001).

Zott and Amit (2010: 216) define the business model “as a system of interdependent activities that transcends the focal firm and spans its boundaries”. The view of the business model concept as an interdependent activity system is rooted in the theories of value chain (Porter, 1985), the resources based view (RBV) (Wernerfelt, 1984), transaction cost economics (TCE) (Williamson, 1985) and industrial networks (Gulati, Nohria and Zaheer, 2000). The value chain concept describes actors and their activities sequentially linked from procurement, R&D, production, marketing and sales (Porter, 1985). The RBV theory identifies a focal firm’s core capabilities and predicts its likely role and position within a value chain (Barney, 1991). For example, a new firm with engineering competencies may adopt the R&D model and access complementary capabilities through alliances (Chesbrough, 2003). Using TCE theory, we can examine the innovator’s opportunism, i.e. its relative value capture potential by assessing whether a firm would integrate vertically to avoid being ‘taken hostage’ or specialize on few competencies and decide to access other capabilities through alliances (Williamson, 1985). Industrial network theory identifies actors and roles involved in a focal firm’s linear and non-linear linkages (Gulati, Nohria and Zaheer, 2000).
The fourth aspect is strategy. With regard to the relationship between a business model and strategy concepts, some scholars treat the two concepts as identical (Hedman and Kalling, 2003; Casadesus-Masanell & Ricart, 2010), while others view the two as different (Timmers, 1998; Magretta, 2002; Chesbrough, 2010). This study takes the latter’s view. While a business model defines the key components and the relationships that hold among them as a system to create and capture value, a strategy concerns with how organizations should sustain competitive advantage over rivals (Osterwalder and Pigneur, 2009; Teece, 2010).

The fifth component of a business model is a revenue model, which deals with the mechanisms used to determine the focal firm’s cost structure, pricing strategy and margin level, i.e. how much to charge its customers (Zott and Amit, 2010).

The five components seem to be connected theoretically in mind or by managerial cognition. Teece (2010) argues that a business model reflects managerial hypotheses and a business logic (economic dimension) by which the relationships of major components (capabilities dimension) are formed, which means it is a cognitive model that helps managers to simplify and model their complex business environments using the economic and capabilities logics. Managerial cognition informs the hypotheses. In other words, managers create and shape the relationships upon which the components are linked that may set a firm’s business model’s evolution (Kaplan, and Tripsas, 2008) within the firm’s unique context. Therefore, a business model has an economic, capabilities and managerial cognition systems dimensions.

The evolution of disruptive business model innovation along these three dimensions rests on two key assumptions. First, although managers may have their initial hypotheses, customer value innovation and the direction of the business model may not be fully anticipated in advance (McGrath, 2010). So it involves constant market experimentations and learning (Thomke, 2002; McGrath, 2010; Chesbrough, 2010). Second, one the direction emerges,
disruptive business model innovation is path dependent (Nelson and Winter 1982). A potentially disruptive innovation originates and grows in a remote or periphery of the incumbent’s cognitive radar (Gilbert, 2003). Once its market unfolds, a disruptive firm grows through the process of adapting to exogenous and endogenous forces, retaining profitable markets, successful products, investments, processes, routines and values and discouraging those that do not confirm with its current business model. Siggelkow (2002) characterizes this adaptation in terms of augmentation, reinforcement, and deletion. A path dependent explanation of disruptive innovation theory (Nelson and Winter 1982) depicts two trajectories that progresses in parallel without any intersection (Christensen, 2006).

Once an entrant firm grows through a disparate trajectory, the interwoven capabilities, cognition and incentive model (Kaplan, 2008) within the niche market may disrupt the mainstream market, if conditions amplify asymmetric revenue models between the entrant and incumbent (Reinganum, 1983) and entrants can gain first mover advantage (Cooper and Schendel, 1976). On the other hand, established firms, particularly successful ones, have developed efficiently functioning and closely interwoven strategy, technological capabilities, processes, values and profit models. Although useful in continuously changing business environments, once an incumbent firm confronts a disruptive change, the co-evolutionary fit among these components (Sigglekow, 2002; Burgelman, 2002) may impede change if prior capabilities become unfit (Leonard-Barton, 1992) and inertial forces surface (Terrien and Mills, 1955). Alternatively, incumbents may isolate a potentially disruptive innovation in a niche market (Adner and Zemsky, 2005), if industry conditions constrain differential incentives or if they can leverage prior capabilities (Cohen and Levinthal, 1990).
A Framework and Hypotheses

Drawing on disruptive innovation theory (Christensen and Ranynor, 2003), capabilities (Teece, Pisano and Shuen, 1997), business model innovation (Chesbrough, 2010; Zott and Amit, 2010; Magretta, 2002) and entrepreneurship literature (Carlsson, 1999; Acs and Audretsch, 1993), this study proposes a conceptual model for disruptive business model innovation development (Figure 2). Based on the literature review, the conceptual model depicts two market phases and ten hypotheses.

Figure 2: A conceptual model for disruptive business model innovation

The first phase posits that a latent disruptive business model innovation creates a niche market outside of the incumbent’s mainstream market long before it becomes disruptive (Gilbert, 2003; Rafii and Kampas, 2002). This niche market emerges through evolutionary and dynamic interplay between the innovator’s emergent capabilities, incumbents’ competitive customer orientation, enter-entrants competition and mainstream market entry barriers. The second phase portrays that a business model innovation only becomes disruptive
when it encroaches the mainstream market (Schmidt and Druehl, 2008), while there are conditions of capabilities misfit (Henderson, 2006; Leanard-Barton, 1992), differential incentives (Cockburn and Henderson, 1994) and incumbents’ dilemma (Christensen, 1997). Each of the nine hypotheses is discussed below.

**Incumbents Customer Orientation and Emergence of Disruptive Niche Market**

The starting point for business model innovation is the formulation of a viable value proposition (Amit and Zott, 2001) and customer segment (Magretta, 2002). New entrants may introduce variant customer value attributes with different levels of performances in a continuum, ranging from ‘inferior’ innovation characterized by higher levels of technological complexities and market uncertainties at one extreme and radical innovation with better performance at the high-end extreme. Roger’s (1995) concept of an innovation’s relative advantage in terms of price, ease of use, technology, quality and brand recognition compared to established products is a key to examine firms competitive reactions (Kim and Maubourgne, 1999; Agarwal and Prasad, 1998; Davis, 1989).

Typically, a potentially disruptive innovation emerges in low-end or remote markets in part because they initially cannot attract the mainstream market because of an inferior value proposition (Christensen and Raynor, 2003). Research documents that disruptive innovation is negatively associated with incumbent’s customer orientation during its introduction stage (Govindarajan et. al., 2011; Zhou et. al., 2005). Firms’ market orientation (Frosch, 1996; Bennet and Cooper, 1976) is shaped by established industry recipes (Spender, 1989) or ‘macrocultural homogeneity’, a shared belief or common frame about product/market scope and how firms compete, i.e. who their customers and competitors are (Abrahamson and Fombrun, 1994). Seen from the incumbents’ managers’ mainstream customers’ value metrics, initial disruptive innovation’s value propositions are likely to be considered inferior by
incumbents (Govindarajan et. al., 2011). Incumbents’ customer orientation refers to managers’ tendency to focus on existing markets and to reject information coming from emerging markets (low-end or un-served markets) that does not conform to their past and current successful ways of doing business (Govindarajan et. al., 2011; Frosch, 1996). Therefore, our first hypothesis is:

*H1: A latent disruptive innovation’s value proposition is negatively related to incumbent’s customer orientation.*

Market orientation is informed by managerial cognition (Prahalad and Bettis, 1995). The role of managerial cognition can then be central to understanding the disparate trajectories between the disruptive and established markets (Kaplan and Tripsas, 2008). Cognitive frames are knowledge structures that help executives to reduce uncertainty and ambiguity, make sense when faced with complex choices, and filter out information that may not conform the previously successful frames or ways of doing business (Weick, 1995) or ‘dominant logic’ (Prahalad and Bettis, 1995). Early disruptive innovation life cycle is characterized by higher levels of technological and market uncertainties (Tushman and Anderson, 1986). Kaplan and Tripsas (2009) argue that given the uncertainty of a technology, cognitive processes can inform trajectory. We extend this view by arguing that cognition can as well explain the disparate trajectories between disruptive and sustaining innovations.

From the entrant’s side, in absence of prior established dominant logic, frames, or market data (van Putten and MacMillan, 2004), a disruptive entrant is likely to be driven by ‘effectuation’ (Sarasvathy, 2008), rather than by analysis and planning of existing market. This new cognition involves scanning the periphery (Day and Schoemaker. 2005) and search for ill-defined market that often triggers off a different evolution (Chrisitensen, 1997). In contrast, the incumbents’ established cognitive frames focus on searching for information or
scanning technology (Srinivasan, Lilien, and Rangaswamy, 2002) to better serve current markets (Slater and Narver, 1998). For example, although radical innovation may cause technological discontinuities, it is arguably presumed to be less disruptive to industry incumbents because its imminent threat of obsolescence to existing dominant design tends to be obvious to incumbents’ managers from the outset (Henderson and Clark, 1990) and draws attention for resource allocation because it often appeals to most profitable mainstream customers (Goivndarajan et. al., 2011). But in absence of signals about a latent disruptive innovation, the incumbent’s senior managers may borrow frames from their dominant logic to evaluate the uncertain innovation (Kaplan and Tripsas, 2008) which often results identifying it as a risk or less profitable venture that may even encourage incumbents to flee disruptive markets in order to concentrate their resources on more profitable customers (Christensen and Raynor, 2003), consequently providing potential disruptive entrants competition-free space and momentum to experiment and grow.

H2. In the long run, incumbents’ customer orientation is positively related to emergence of disruptive niche market.

An Entrant’s Different Value Chain Configuration and Emergent Innovation Capabilities

Disruptive business model innovation often results from fundamental changes in the established value propositions or altering the firm’s role in the existing value chain or both (Moore, 2004). An activity system (Zott and Amit, 2010) or value chain analysis (Porter, 1985) can help us to understand the new value chain configuration that drives disruptive innovation (Chesbrough and Rosenbloom, 2002). Looking into the value chain, one can also evaluate the focal firm’s ability to develop dynamic capabilities (Teece et. al. 1997). Disruptive innovation may emerge initially inferior, but the innovator’s ability to develop
emergent capabilities to adapt to endogenous and exogenous innovation drivers is critical (McGrath, 2010; Thomke, 2002).

Emergent disruptive business model innovation capabilities often result from developing unique core capabilities that guarantee the innovating firm a unique place in a value chain (Barney, 1991). This place often results from several advantages including creating novel value propositions, locking-in customers through network effects (Amit and Zott, 2001), efficiency or lower cost and high volume advantage (Porter, 1985) and downstream capabilities that bring innovation to market faster than rivals (Chesbrough, 2003).

In developing a disruptive business model, the most critical source of advantage is the new value chain’s lower cost structure that can provide the opportunity to experiment with small investments (Carlsson, 1999). In some circumstances, there is a greater scope for continuous technological innovation with relatively smaller incremental investments (Acs and Audretsch, 1993). When a disruptive entrant takes upward its low-cost business model to compete against established firms, much of the incremental costs are likely to fall into the bottom line (Christensen and Raynor, 2003). For example, Dell’s “built-to-order” direct business model was synonymous with emergent disruptive business model innovation capabilities in terms of lower cost advantage, swift learning and speed to market (Govindarajan and Gupta, 2001).

\[ H3: \text{An entrant’s different value chain configuration from the incumbent is positively related to emergent innovation capabilities.} \]

\[ H4: \text{Emergent innovation capabilities are positively related to emergence of disruptive niche market.} \]

**Enter-Entrants Competition and Emergence of Disruptive Niche Market**

There are two general views with regards to how firms compete. In the ‘planning oriented’ perspective, a firm first recognizes a strategic position within the value network by analyzing
the industry forces (Porter, 1985) or internal hard-to-imitate strategic capabilities (Barney, 1991), then it proceeds to architect a business model to realize its strategy (Hedman and Kalling, 2003). In the ‘emergent’ (Mintzberg, 1994) or ‘discovery-driven’ perspective (McGrath & MacMillan, 1995), firm do not initially commit to a specific strategy. Rather, they begin life by searching for market opportunities and continue to innovate with less regard to strategy at least in the initial stage (Magretta, 2002). Technology evolution theory depicts a ferment era characterized by competitive technological innovations that precedes selection of a dominant design (Utterback and Suarez, 1993; Anderson and Tushman, 1990; Abernathy, 1978). A disruptive entrant may gain the first mover advantage (Cooper and Schendel, 1976) which in return might enable to exploit demand-side network externalities in some technologies (Katz and Shapiro, 1985). However, the disruptiveness capacity of a niche market as a whole can only increase if the innovation can be replicated and attracts new competition. Therefore, the emergence of enter-entrants competition can be seen as a signal of the emergence of a disruptive trajectory (Adner and Zemsky, 2005).

H5: Enter-entrants competition is positively related to emergence of disruptive niche market.

Mainstream Market Entry Barriers and Emergence of Disruptive Niche Market

The positive effects of a firm’s emergent innovation capabilities on creating and growing a potentially disruptive niche market can be moderated significantly by lack of latent disruptive innovation’s economic feasibility, mainstream customers’ switching barriers (Rogers, 2003) and institutional factors. Population ecologists and evolutionary theories suggest that an emergent dominant design and market selection of a new and equivocal technology are defined not only by organizational capabilities but also by complex economic, market, institutional and competitive factors (Suarez and Utterback, 1995; Barnett and Carol, 1995;
Tushman and Rosenkopf, 1992; Anderson and Tushman, 1990). From economic perspective, established firms generally do not see incentives to invest in latent disruptive innovation (Reinganum, 1983). Likewise, low incentives may impact negatively a potentially disruptive firm’s ability to mobilize capital, resources and actors who can invest in a new value network (Cockburn and Henderson, 1994; Zheng, Liu and George, 2010). A resource scarce entrant may not scale up its disruptive niche market. It may create a niche market and remain isolated there. Another factor that may constrain or enable disruptive innovation is complementary assets. Teece (1986) argues that an entrant’s innovation may be appropriated by established firms that possess complementary assets. Therefore, a niche market business model can be isolated in niche market by mainstream entry barriers if necessary conditions are not in place (Barnett and Carol, 1995).

*H6: Mainstream entry barriers are negatively related to emergence of disruptive niche market.*

**Mainstream Market Disruption**

The six hypotheses presented above model the process of business model innovation in creating a *potentially disruptive niche market*. While any business model innovation may create a niche market, disruption occurs only when the innovation reaches a good enough point to attract mainstream customers and that incumbents confront business model conflict to respond effectively (Gilbert, 2003). The second section models disruption as a function of business models conflict that arises due to multiple effects including (H7) capabilities mismatch (Henderson, 2006; Leanard-Barton, 1992; Henderson and Clarck, 1990), (H8) asymmetric incentive systems (Christensen and Raynor, 2003; Cockburn and Henderson, 1994) and (H9) incumbents’ managerial dilemma (Christensen, 1997).
**Capabilities Misfit**

Capabilities can be defined as the company’s ability to identify, integrate, develop and configure its own and others’ competences and resources to innovate (Teece et. al., 1997). Key capabilities that determine what a firm can and cannot do are defined as processes, resources and value systems (Christensen and Overdorf, 2000). A firm’s capabilities are interwoven with its incentive system and cognitive frames (Kaplan, 2008) and evolve embedded within its business model (Christensen and Overdorf, 2000). Capabilities can enable radical change when prior competences can be leveraged (Shane, 2000; Cohen and Levinthal, 1990) or obstruct change when conditions amplify capabilities misfit (Barnet and Carrol, 1995; Tushman and Anderson, 1986).

Capabilities misfit is attributed to the extent an innovation departs from established R&D, scientific and engineering principles (Dewar and Dutton, 1986; Rothwell, 1986; Ettlie, Bridges and O’Kefe, 1984) and accumulated technical competencies (Henderson and Clark, 1990; Tushman and Anderson, 1986). Henderson (2006) argues that embedded organizational technical competences are sources of incumbent’s’ managerial dilemma in face of disruptive innovation.

H7. *Capabilities misfit is positively related to disruptive innovation.*

**Asymmetric Incentive Systems**

Christensen and Raynor’s (2003) concept of asymmetric motivation explains that incumbents that have already committed substantial resources to profitable established markets (Reinganum, 1983) are normally less motivated to cannibalize the flow of income (Mason and George, 1994) when confronted with disruptive innovation. Because of this conflicting business models, integrating disruptive innovation in an existing organizational structure may negatively affect established value propositions including prices, product qualities and
company image (Markides and Charitou, 2004). It is argued that these factors can force an incumbent to create an autonomous structure to isolate disruptive innovation (Christensen and Raynor, 2003). Therefore, asymmetric incentive systems between the entrant and incumbent are a necessary condition for disruptive innovation.

H8. Asymmetric incentive models are positively related to disruptive innovation.

The incumbent’s dilemma

Capabilities mismatch and business model conflicts create a serious challenge to senior management in how to deal with disruptive innovation. This problem referred to as “the innovator’s dilemma” is one of the most distinguishing precursors of disruptive innovation (Christensen, 1997). Managerial cognitive dilemma arises when, on the one hand, established firms must continue to allocate resources to the most profitable markets in order to satisfy their profitable customers as well as investors by earning strong margins. On the other hand, failing to allocate resources to disruptive innovation, while managing their traditional business models, can pave the way for their own disruption (Christensen and Raynor, 2003). Responding to disruptive innovation entails risks of competing against their own established products and damaging relationships with traditional value network partners (Chandy and Tellis, 1998).

H9. Incumbents’ managerial dilemma is positively related to disruptive innovation.

Research Methods

Sample and Data Collection

The empirical setting of this study focused on disruptive entrants and incumbents that embraced disruptive innovations in five industries namely, fixed-line, mobile communications, insurance, banking and airlines industries in South Africa. While our level
of analysis treated small to medium firms as single respondents, large diversified corporations were represented by strategic business units (SBU) (Govindarajan et al., 2011; Chandy and Tellis, 1998). The sample selection was carried out over three course of screening process; (1) indentifying disruptive innovations in South Africa, (2) entrants and incumbents that embraced disruptive innovation and (3) informants.

**Disruptive innovations in South Africa:**

To identify disruptive innovations in South Africa, we conducted 36 in-depth interviews with top level managers with an average length of 1.30hrs. 27 interviews were tape-recorded and transcribed. In addition, given disruptive innovation often attracts high attention, mostly from the media, because it is intriguing and different (Moore, 2004: 88), we used secondary sources to identify these samples. The interviews and secondary data yielded a pool of 19 candidates.

As does previous research on this topic, we rather focused on few innovations that introduced fundamentally different business models with significant impact on established markets (Gilbert, 2003; Chesbrough and Rosenbloom, 2002). From the original sample of 19 innovations, the authors selected five innovations (see Table 1). These innovations were screened out based on the theoretically established criteria of disruptive innovation and innovations. Specifically, one of its important characteristics is the introduction of a fundamentally different business model relative to the archetypal industry business model (Chesbrough and Rosenbloom, 2002). In addition, we identified innovations that prior researchers have already categorized as disruptive innovations.
Table 1: Samples of Disruptive Innovations

<table>
<thead>
<tr>
<th>Disruptive innovation</th>
<th>New business model</th>
<th>Comparable existing product/business model</th>
<th>Prior research</th>
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<tbody>
<tr>
<td>Voice over Internet Protocol (VoIP); voice over wireless local area network (VoWLAN) via GPRS/3G</td>
<td>A flat rate subscription business model via IT terminators</td>
<td>Voice via GPRS/3G network - airtime per minute based business model</td>
<td>Habtay (2012); Madjdi and Huesig (2011); Huesig, Hipp and Dowling (2005); Christensen, Anthony and Roth (2004).</td>
</tr>
<tr>
<td>Instant mobile messaging (IMS), social networking on Java software application using the GPRS/3G packet data</td>
<td>Social networking via membership subscription</td>
<td>Short Message System (SMS) – charging per SMS business model</td>
<td></td>
</tr>
<tr>
<td>Direct low-cost airlines model</td>
<td>Direct low-cost airlines model</td>
<td>Full-service agent based business model</td>
<td>Raynor., (2011); Christensen et. al.,(2004).</td>
</tr>
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The five selected disruptive innovations were: (a) Voice over Internet Protocol (VoIP) technology, alternatively known as voice over wireless local area network (VoWLAN), b) mobile social networking technology that runs on java software application. These two technologies transmit Internet voice and data communications via the Internet over GPRS/3G mobile networks and Public Switched Telephone Networks (PSTN). Research has already identified these innovations as disruptive technologies to the mobile cellular and fixed-line communications (Habtay, 2012; Madjdi and Huesig, 2011; Huesig, Hipp and Dowling , 2005). (c) Low-cost no-frills airlines’ business model, (d) online direct insurance model, and (e) Internet and mobile banking. Previous research have identified these innovations as disruptive business models to the full-service mainstream business models in the airlines, insurance and banking industries (Raynor, 2011; Markides and Charitou, 2004; Christensen et. al., 2004).
Firms and Informants Selection

The key criterion of selection was to identify firms that embraced disruptive innovations under varying organizational arrangements (Mardkies and Charitou, 2004). To identify these companies and informants, we used open interviews with managers and industry experts, desk research, referrals from business schools and industry institutions, the media and Internet. We focused on five industries that were likely to be affected by a priori chosen five innovations.

We used the guidelines advocated by Huber and Power (1985) to identify key informants. To ensure that the right informant participated in the survey, a respondent selection was based on several criteria: (a) founders of a potentially disruptive spin-off in corporations (b) managers with responsibility for strategic business units (SBUs), (c) active involvement in managing innovation or major company transformation projects and (d) seniority in management position.

Based on the literature review, open interviews and the conceptual model, a structured questionnaire was developed. Most of the constructs were adapted from previously used scales and all question items used a seven-point Likert type scale. The introduction of the questionnaire was adapted for each of the five innovations and pilot tested in two stages. First, three innovation scholars and MBA students tested the questionnaire based on instructions to identify any inappropriately or ambiguously worded questions and to provide comments on the content. Based on their feedback, the scale items were modified and reworded. Next the questionnaire was pilot tested with 20 middle managers across the five industries. The returned questionnaires were examined for completeness of responses, reliability and construct validity. After necessary changes were made, 500 questionnaires were sent with a letter of support from the university explaining the academic purpose of the study, with brief illustrations of disruptive innovation examples of the mobile-phone relative to fixed-line (Govindarajan and Koppale, 2006) and Southwest LCC model relative to the traditional full-
services legacy airlines model (Christensen et. al., 2004). Respondents were informed of the confidentiality of their responses and promised a summary report of the research.

As noted by Hoskisson, Eden, Lau and Wright (2000), in emerging countries collaboration with researchers who are well informed about the specific phenomenon under investigation and who can effectively contact informants to conduct face-to-face interviews is a major source of obtaining reliable and valid data. Using the funds granted by the university and national institutions, three South African research associates who were highly familiar with the literature of disruptive innovation and this project were employed under the principal researchers to administer the questionnaire, set up appointments and conduct face-to-face interviews to fill the structured questionnaire. This resulted n = 128 or 26% response rate. 14 were removed for miscellaneous reasons including incomplete information, inconsistencies and outliers. 114 complete responses were used to test the entrant’s model (H1 – H6). This data comprises 18% banking, 16% insurance, 16% airlines companies, and 50% mobile and fixed-lines communications industries.

From the total 114, only 88 responses were used to test the second model (H7 – H9). 26 responses were excluded for a number of reasons from testing the second mode. 21 were entrants that introduced disruptive innovation but did not manage traditional businesses before launching the innovation. 5 were large diversified entrants that entered into the disrupted industries by setting up independent companies but managed unrelated businesses in other industries that were not affected by disruptive innovations. The n = 88 data consisted only firms that embraced disruptive innovations under varying organizational arrangements while simultaneously continued to manage traditional business units that existed prior to embracing the innovations in the same industries. The sample covered mobile and IT communications 26%, fixed-line 20%, insurance 24%, banking 19% and airlines 11%. The non-response bias was tested using t-test between early and late respondents firms, and
between respondents and non-respondents in terms of the two firm size indicators, specifically annual sales revenues and number of employees. The test revealed no significant differences ($p > .10$).

**Measures**

**Dependent Variables**

*Emergence of disruptive niche market:* Respondents were asked to rate the growth of the niche market (1 = “very small”, 7 = “very big”): a) the market share of the pioneering entrant that launched this innovation/new business model, b) the market share of all new competitors (with similar new business models), c) the growth potential of the innovation in future (Markides and Charitou, 2004).

*Disruption:* Adopting Mardkies and Charitou (2004) scales, we developed four scales to measure disruption (1 = “very small”, 7 = “very big”): a) the market share of all new competitors (with the new business model), b) the market share your company lost as the consequence of this innovation's growth, c) the market share other incumbent's from the industry lost as the consequence of this innovation's growth, d) the threat this innovation poses to existing traditional business models in the industry in future (see also Dess and Robinson, 1984),

**Independent Variables**

*Disruptive innovation’s relative advantage:* To determine from established firms’ managers’ perspective whether the innovation had a relative advantage compared to existing products (Agarwal and Prasad, 1997), we asked managers to rate the innovation in terms of: (a) price, (b) ease-of-use, (c) technology “newness”, (d) quality, (c) brand recognition (1 = “very least advantage” to 7 = “very great”). Typically disruptive innovation is perceived on
average low on these attributes, but radical innovation is perceived high on average (Govindarajan and Kopalle, 2006).

**Incumbents’ customer orientation:** We asked incumbents managers to rate the innovation on a 7-point Likert scale (1 = “strongly disagree”, 7 = “strongly agree”) that (a) innovation is attractive to mainstream customers, (b) attractive to established incumbents revenue model, (c) does not appeal to low-end or previously un-served markets, and (d) creates a niche market size that is big enough to attract established competitors (Govindarajan and Kopalle 2006). Radical innovation is positively related to incumbents’ manager’s mainstream customer orientation. But disruptive innovation is negatively related to incumbents’ managers’ customer orientation (Govindarahan et. al., 2011; Zhou et. al., 2005).

**Differential value chain configuration** is measured by rating how different (1 = “very similar”, 7 = “very different”) the components of entrant’s value chain were compared to the industry’s archetype traditional value chain in the following four items: a) production process, b) supply channels, c) distribution channels, d) marketing and sales (Adner, 2002; Chesbrough, 2006; Gilbert, Newbery and Reinganum, 1984; Reinganum, 1983).

**Emergent innovation capabilities** is measured by three observed variables: a) cower cost advantage, b) consumer-insight, c) speed-to-market factors (1= “very ineffective”, 7 = “very effective”) (Govindarajan and Gupta, 2001; Holmstrom, Hoover Jr., Louhiuoto and Vasara, 2000; Evans and Wurster, 1997):

**Enter-entrants competition** is assessed by asking how big was the size of new competitors with disruptive business models competing in the disruptive market (1 = “very small”, 7 = “very big”) (Burns and Stalker, 1966; Porter, 1985).

**Mainstream entry barriers** is evaluated by asking respondents to rate the barriers (1 = “strongly disagree”, 7 = “strongly disagree”) on five scales a) lack of access to capital or resources (finance, skilled labor, technology, equipment), b) mainstream customer lack of
accessibility (shortage of business infrastructure), c) mainstream customers lack of affordability (large population with low income and/or low education), d) constraining regulations, and e) incompatibility of the innovation with existing complementary devices (Chesbrough, 1999; Porter and Stern, 2001; Teece, 1986).

Capabilities misfit: This construct measured the innovation’s relative departure from the established firm’s competencies and skills (1 = “very similar”, 7 = “very dissimilar”) on two aspects: a) innovation’s departure from the company’s previously existing core product or service design (Dewar and Dutton, 1986; Henderson and Clark, 1990), and b) innovation’s departure from previously existing core competencies (knowledge, technology, processes) (Tushman and Anderson, 1986).

Asymmetric economic models: Disruptive innovation is a function of business models conflicts. To establish that firms indeed confronted conflicts and risks between the innovation and traditional businesses, we development a 7-point Likert scale (1 = “strongly disagree”, 7 = “strongly agree”) from Markides and Charitou’s (2004) scales: a) risk of cannibalization of existing sources of revenue flow (Mason and George, 1994), b) lowering profit margin (Abernathy and Clark, 1985), c) degrading existing product’s quality, d) damaging company’s image, e) damaging relationship with existing distribution channels and f) defocusing from main strategic market (Porter, 1985).

Incumbents’ managerial dilemma: Based on existing literature, we developed five scales to measure managerial dilemma using the following questions (1 = “strongly disagree”, 7 = “strongly agree”): a) difficult to anticipate the impact of the innovation on our main market (Paap and Katz 2004), b) difficult to believe the innovation was the right way to do business in the industry (Markides and Charitou, 2004), c) responding to the innovation involved a risk of cannibalizing existing market share, e) responding to that innovation involved risk of losing our main partners (distributors) (Chandy and Tellis, 2000), and d) our management
was not willing to embrace the innovation when it emerged (Chandy and Tellis, 2000, Hannan and Freeman, 1984).

**Potential Limitation of the Research Method**

The questions were designed to ask respondents to reflect retrospectively on the specific disruptive innovation process phenomenon, starting from inception to the point of disruption. Respondents answered questions not only about their companies’ experiences but also about the other side’s experiences during disruptive business model innovation process. Such *ex post* design may raise the issue of retrospective bias (Huber and Power, 1985). We tried to minimize the potential bias by taking two actions. First, we selected the most senior managers with average seven years seniority in the company.

The second action taken to minimize retrospective bias was to increase respondents recall accurateness. As mentioned earlier, five case studies were developed for each disruptive innovation. This increased the familiarity of respondents with specific innovations. The questionnaire was adapted to each industry for each specific innovation. Following Govindarajan and Kopalle (2006), example the first page of the questionnaire provided two brief case examples of disruptive innovations; the introductions of cellular phone relative to fixed-line phone and Southwest’s no-frills low-cost business model relative to network carriers’ full-service business models.

While giving clues to help respondent answer the right question, the recall time was also carefully considered. The disruptive innovation sample items selected in this study had on average five years age at the time of data collection. This means that our questionnaire was designed on a maximum five year recall time. Kuczmarshki (2000) suggested a three year development period before an innovation unfolds in a market. Govindarajan and Kopalle (2006) used a five year recall time to investigate retrospectively disruptive innovation. The
five selected disruptive innovations in South Africa were introduced between 2001 and 2006. Our data collection took place in 2008. Thus, this time span can be considered as adequate recall time.

Reliability and Validity Tests

Cronbach coefficient alphas range for all items range from 0.61 to 0.90 (Table 1). This demonstrates sufficient internal consistency and reliability (Nunnally, 1978). Table 2 shows the Pearson Correlation Coefficients for all hypothesized variables. The significant correlations for most variables may be considered as evidence of construct validity (Hull and Covin, 2010). Multicolinearity is modest as most of the predictor variables have correlations less than $r = .50$.

We tested convergent and discriminant validities using exploratory factor analysis (Principal Component Analysis). While convergent validity tests whether respective manifest variables (MVs) or scales represent or load onto a respective single latent variable (LV), the discriminant validity assesses whether the MVs that load on a single LV discriminate adequately from other LVs (Hair, Babin, and Samouel, 2003). All factors of the major variables are with Eigenvalues greater than 1; the percentages of variance explained for the major variables are above 0.5, and all relevant factor loadings are greater than 0.5. These results demonstrate that the manifest variable (MV) items cleanly load onto their intended latent variables (LVs), showing significant convergent and discriminant validity (Nunnally, 1978). All hypotheses were tested using SAS 9.3 regression analysis method on aggregated 114 and 88 data for the first and second models respectively.
Table 1: Descriptive Statistics and Correlations (n=114)

<table>
<thead>
<tr>
<th></th>
<th>Alpha</th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. DI Inferior VP</td>
<td>0.821</td>
<td>3.354</td>
<td>1.007</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Customer Orientation</td>
<td>0.760</td>
<td>2.695</td>
<td>0.963</td>
<td>-0.190***</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Value Chain</td>
<td>0.769</td>
<td>5.149</td>
<td>1.096</td>
<td>0.465****</td>
<td>-0.407****</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Innovation Capabilities</td>
<td>0.774</td>
<td>5.018</td>
<td>1.219</td>
<td>0.558****</td>
<td>-0.327****</td>
<td>0.705****</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Barriers</td>
<td>0.614</td>
<td>4.614</td>
<td>0.903</td>
<td>-0.008</td>
<td>-0.213***</td>
<td>0.297****</td>
<td>0.096</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Competition</td>
<td>0.674</td>
<td>4.050</td>
<td>1.357</td>
<td>0.406****</td>
<td>0.117</td>
<td>0.094</td>
<td>0.145</td>
<td>-0.115</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Capabilities Misfit</td>
<td>0.750</td>
<td>4.794</td>
<td>1.059</td>
<td>0.382****</td>
<td>-0.227***</td>
<td>0.534****</td>
<td>0.453****</td>
<td>0.0627</td>
<td>0.148</td>
<td>0.147</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Asymmetric Incentives</td>
<td>0.890</td>
<td>4.347</td>
<td>1.213</td>
<td>0.242****</td>
<td>0.0859</td>
<td>0.127</td>
<td>0.246****</td>
<td>-0.1651*</td>
<td>0.158*</td>
<td>0.122</td>
<td>0.083</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>9. Dilemma</td>
<td>0.900</td>
<td>3.882</td>
<td>1.237</td>
<td>0.428****</td>
<td>0.296****</td>
<td>0.069</td>
<td>0.1965**</td>
<td>-0.404****</td>
<td>0.406****</td>
<td>0.426****</td>
<td>0.223**</td>
<td>0.411****</td>
<td>1</td>
</tr>
<tr>
<td>10. Disruptive Innovation</td>
<td>0.800</td>
<td>3.667</td>
<td>1.211</td>
<td>0.446****</td>
<td>0.236***</td>
<td>0.193**</td>
<td>0.328****</td>
<td>-0.20448**</td>
<td>0.23727***</td>
<td>0.365****</td>
<td>0.169*</td>
<td>0.443****</td>
<td>0.777****</td>
</tr>
</tbody>
</table>

***p<.001, **p < .01, *p < .05, *p < .1
Results

First, H1 and H3 were tested independently using single regression analysis, as basic tests to define disruptive innovation. As expected in H1, a potentially disruptive innovation’s initial value proposition is negatively related to incumbent’s customer orientation ($B = -0.145$, $p<.001$ see Table 2). Consistent with H3, the entrant’s differential value chain configuration is strongly positively related to emergent innovation capabilities ($B = 0.584$, $p<.0001$ see Table 3).

**Table 2: H1: Regression Model 1: Dependent Variable - Customer Orientation**

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>$\beta$</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>13.223***</td>
<td>1.243</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>H1: Disruptive Innovation’s Initial Value Propositions</td>
<td>-0.145**</td>
<td>0.071</td>
<td>-0.190</td>
<td>1.000</td>
</tr>
</tbody>
</table>

**** $p<.0001$, ***$p<.001$, **$p<.01$, *$p<.05$

**Table 3: Regression Model 2: H3: Dependent Variable - Emergent Capability**

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>$\beta$</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>3.013***</td>
<td>1.170</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>H3: Disruptive Value Chain</td>
<td>0.584****</td>
<td>0.056</td>
<td>0.705</td>
<td>1.000</td>
</tr>
</tbody>
</table>

**** $p<.0001$, ***$p<.001$, **$p<.01$, *$p<.05$

The dependent variables of H1 (incumbents customer orientation) and H3 (emergent innovation capabilities) were fed into the multiple regression model 3 (Table 4) as independent variables (H2 and H4). In support of H2, Table 4 shows strong positive effect of incumbents’ customer orientation on potentially disruptive business model niche market innovation ($B = 0.323$, $p<.001$). Consistent with H4, the result shows a strong significant positive relationship between emergent innovation capabilities and potentially disruptive
business model niche market innovation (B = 0.396, p<.0001). Similarly, and H5 competition has a strong positive effect on potentially disruptive niche market business model innovation (B = 0.372p<.0001). H6 mainstream entry barriers is negatively related to niche market business model innovation (B = -0.661, p<.0001)

Table 4: Regression Model 3: Dependent Variable – Potentially Disruptive – Niche Market

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>B</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>2.724***</td>
<td>1.848</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>H2: Incumbents orientation</td>
<td>0.323***</td>
<td>0.137</td>
<td>0.191</td>
<td>1.192</td>
</tr>
<tr>
<td>H4: Emergent innovation</td>
<td>0.396****</td>
<td>0.108</td>
<td>0.295</td>
<td>1.169</td>
</tr>
<tr>
<td>H5: Competition</td>
<td>0.372****</td>
<td>0.092</td>
<td>0.310</td>
<td>1.067</td>
</tr>
<tr>
<td>H6: Mainstream entry barriers</td>
<td>-0.661****</td>
<td>0.138</td>
<td>-0.367</td>
<td>1.059</td>
</tr>
</tbody>
</table>

****p<.0001, ***p<.001, **p<.01, *p<.05

Next, regression model 4 (Table 5) tests the multiple effects of capabilities misfit (H7), incentive systems conflict (H8) and incumbent’s managers’ dilemma (H9) on disruptive innovation (using n = 88). Contrary to expectation in H7, capabilities misfit do not have significant effect on disruptive innovation (B = -0.006, p>0.1). H8 asymmetric incentive models (B = 0.153, p>.001) and managerial dilemma (B = 0.679, p>.0001) have strong effects on disruptive innovation.

Table 5: Regression Model 4: Dependent Variable – Disruptive Innovation

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>B</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>0.209</td>
<td>0.427</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>H7: Capabilities misfit</td>
<td>-0.006</td>
<td>0.069</td>
<td>-0.006</td>
<td>1.056</td>
</tr>
<tr>
<td>H8: Asymmetric incentive systems</td>
<td>0.153***</td>
<td>0.065</td>
<td>0.153</td>
<td>1.208</td>
</tr>
<tr>
<td>H7: Dilemma</td>
<td>0.679****</td>
<td>0.070</td>
<td>0.694</td>
<td>1.495</td>
</tr>
</tbody>
</table>

****p<.001, ***p<.01, **p<.05, *p<.1
Discussions and Conclusions

This study modelled the evolutionary development of disruptive business model innovation by proposing two hierarchically linked phases. Consistent with previous research, the result of this paper suggests that latent disruptive innovation is negatively related to incumbent’s managers’ mainstream customer orientation at initial stage (Govindarajan et. al., 2011; Adner, 2002; Christensen, 1997). This negative relationship should define a potentially disruptive innovation, and should distinguish at the most basic level between disruptive and sustaining innovations. In addition, it should also distinguish disruptive kinds of innovations from other types of discontinuous innovations, e.g. radical innovations that are positively related to incumbent’s managers’ mainstream market orientation (Govindarajan et al., 2011).

In the long run, however, incumbents’ mainstream customer orientation can be positively associated with the emergence of a potentially disruptive niche market. This suggests that beyond the disruptive innovation’s endogenous characteristics, exogenous asymmetric cognition orientations between the innovator and incumbent can inform the disparate trajectories.

This insight provides theoretical reasoning to consider *ex ante* incumbents’ customer orientation as one of the precursors of a *potentially disruptive* niche market. This negative (incumbents) customer orientation towards disruptive innovation arises because neither the new business model’s disruptiveness potential nor its trajectory is perceptible *ex ante* (Danneels, 2004; Gilbert, 2003; Nightingale, 2004) in niche markets that emerge outside of incumbents radar (Christensen and Raynor, 2003). While the flood of new firms in a niche market can increase the threat of disruption, incumbents’ absence or possibly misguided responses to disruptive firms during the niche market phase may also increase the disruptiveness potential of the niche market. We find support in Christensen’s (1997) argument that established firms are likely to flee the niche market in order to concentrate on
profitable markets, consequently providing new firms a competitive free space and momentum to grow the niche market.

The incumbent’s part of the disruptive innovation model hypothesized that a potentially disruptive niche market business model innovation can be transformed into disruptive innovation, if conditions amplify asymmetric capabilities and incentives and associated incumbents’ managerial dilemma. Studies on technological change have argued that technical competencies mismatch can cause incumbents misfortune in face of discontinuous innovation (Henderson, 2006; Henderson and Clark, 1990; Tushman and Anderson, 1986). But our findings suggest the notion of capabilities misfit may not be present in disruptive innovation phenomena.

Confirming to Christensen’s (1997) argument, our result suggests that incumbents may be disrupted, despite mastering radical, competence-destroying or architectural innovation capabilities. There are two possible explanations. First, some disruptive business model innovations, such as no-frills low-cost airlines, insurance and banking models may create misfits in downstream capabilities such as in distribution and sales, but they do not significantly depart from established upstream technical activities. When conditions allow, incumbents can leverage accumulated capabilities and thus respond successfully. Second, although some technologically sophisticated disruptive innovations entail downstream and upstream capabilities misfit, resource endowed firms may either hire skills and technologies or acquire disruptive firms to develop disruptive capabilities.

This study confirms that disruptive innovation is the function of asymmetric incentive systems and managerial dilemma. The economic asymmetric explanation depicts disruptive innovation as a process outcome when entrants pursue competition through low-cost high volume business models against differentiated business models in the mainstream market. This creates a dilemma for incumbents which in turn may trigger disruption.
Theoretical and managerial implications

Our study makes several key contributions to theory and practice. First, most business model innovation studies adopt entrants’ entrepreneurial perspectives in examining new business model development. Conversely, extant disruptive innovation research begins when these studies “end” and adopt incumbents perspectives in exploring firms impediments to adaptive efforts. This study systematically links both perspectives together and explores disruptive business model innovation. Second, disruptive innovation theory attributes to technological change or asymmetric economic motivations for the departure of disruptive paradigm. Beyond these explanations, this study shows how asymmetric cognitive orientations can inform the disparities between the disruptive and sustaining business models trajectories.

Third, this study systematically unpacks the differential effects of capabilities, incentive systems and managerial cognition as underlying mechanisms of disruptive innovation. While asymmetric incentives and cognition orientations can explain disruptive innovation, asymmetric technical capabilities have no effect on disruptive innovation. The study further breaks down the cognitive explanation into incumbents’ customer orientation and incumbents managerial dilemma. Incumbents’ customer orientation refers to ex ante difficulties in identification of latent or emerging disruptive niche market. On the other hand, incumbents dilemma is an ex post construct that explains the difficulties incumbents’ managers encounter in responding to disruptive innovation when the incumbent confronts disruptive innovation.

Limitations and Future Research

First, although the business model literature has offered a number of important theoretical frameworks of business model concept, strategic management research has yet to offer psychometrically reliable, valid and widely agreed upon definition with operational constructs of the concept that can assist for innovation research on the topic of disruptive business model
innovation (Markides, 2008). Since the business model concept is evolutionary, complex, dynamic and multidimensional that considers all aspects of business activities over development period, this study focused only on few aspects. Other important explanatory constructs could have been excluded from our analysis.

Second, we tested the conceptual model on aggregated data from five industries. However this attempt to generalize the findings across industries makes data interpretation problematic. Disruptive innovation is relative, “not an absolute phenomenon” (Christensen, 2006: 42). In other words, disruptiveness can only be defined in relation to a certain incumbent’s business model in a specific context. If each disruptive innovation is investigated separately across the five industries, each could have drawn alternative explanations. Study on disruptive business model innovation heterogeneity across industries could thus shed further knowledge.

Third, our results show that a potentially disruptive niche market business model does not have inherent disruptive capacity on its own. Although a latent disruptive innovation can initially create a niche market, some business models functioning as “tickets to entry” may fail (Brink and Holmén, 2009), while others may remain isolated in niche markets. Still in other circumstances some may progress over time through a disparate performance trajectory to spark an era of disruption. But this situation appears unpredictable and difficult to make theoretical connections ex post.

The challenge of identifying early signals of latent disruptive innovation remains unsolved. Further research could investigate the inherent features of latent disruptive business model innovation in order to distinguish from other types of low-cost business models that do not materialize disruptive threats. Furthermore, little is known of incumbents competitive behaviour before disruption unfolds. Our conclusion that incumbents’ customer orientation leads to absence is a necessary generalization and considers incumbents as homogenous. A
future study on the heterogeneity of incumbents’ reactions during a potentially disruptive niche market evolution period could be an interesting topic to explore.

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