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Thesis Abstract

The aim of this thesis is to understand how incumbents' strategies interact with demand factors, so that they can be leveraged to face technological change. This topic is explored in different ways throughout the three chapters, first at the micro, individual level and then at a macro level.

The first chapter is a conceptual paper that develops a trait-process-outcome model that explains how top manager and middle manager contact with potential consumers can increase the likelihood of established firms developing and implementing effective de novo consumer value propositions. For the trait portion of the model, we first build nascent theory showing *which types* of potential consumers are most likely to aid top management strategists in developing and evaluating prospective de novo consumer value propositions. Second, we build theory showing *which types* of potential consumers are most likely to aid middle managers in evaluating the potential profitability of and effectively implementing these new consumer value propositions. For the process portion of our model, we build theory showing the *process characteristics* for top manager-consumer and middle manager-consumer interactions that are likely most beneficial in producing the desired outcomes. The outcome portion of our model includes the development and evaluation of de novo consumer value propositions and improved top manager-middle manager communications during the process.

The second chapter is an empirical study that explores the implications of digitization at the industry level. Digitization, in many industries, has destroyed a complementary asset of those incumbent producers that controlled access to physical distribution. We examine the impact of digitization for music record companies using a differences-in-differences design and unique data on 9,600 singles released in the United States between 2011 and 2013. We show that, with the introduction of streaming sales in the singles chart, leading companies – compared to non-leading incumbents – are less likely to enter the chart but increase their average chart position. We then show which innovation strategies digitization favors – namely, experimentation with emergent artists, exploration of niche genres and exploration pursued internally – and that leading incumbents use to sustain performance.

The last chapter is an empirical study that instead addresses the implications of digitization for the mobility and performance of creative resources of incumbent producers. We examine the impact of digitization for artists in music using a differences-in-differences design and unique data on 9,600 singles released in the United States between 2011 and 2013. We show that, with the introduction of streaming sales in the singles chart, artists who moved in their career – compared to those who never moved – increase their average chart position. We then focus on the type of mobility and show that digitization does not favor internal mobility compared to the external one. Therefore, our findings show that a technological change can have implications also for firms' resources and their mobility.

PhD Thesis

**THREE ESSAYS ON THE FIRM-DEMAND INTERACTION IN FACE OF
TECHNOLOGICAL CHANGE**

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1st CHAPTER

BEYOND “FASTER HORSES!” HOW CERTAIN POTENTIAL CONSUMERS CAN HELP FIRMS’ STRATEGISTS AND MIDDLE MANAGERS DEVELOP, EVALUATE AND IMPLEMENT DE NOVO CONSUMER VALUE PROPOSITIONS

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Abstract

We develop a trait-process-outcome model that explains how top manager and middle manager contact with potential consumers can increase the likelihood of established firms developing and implementing effective de novo consumer value propositions. For the trait portion of our model, we first build nascent theory showing *which types* of potential consumers are most likely to aid top management strategists in developing and evaluating prospective de novo consumer value propositions. The potential consumer traits we examine are: risk-taking, an emergent nature, and non-conformism. The goal is that top management strategists develop the tacit knowledge necessary to uncover and understand latent or even unknown consumer needs. Second, we build theory showing *which types* of potential consumers are most likely to aid middle managers in evaluating the potential profitability of and effectively implementing these new consumer value propositions. The potential consumer traits we examine are those of consumer “influentials” and “imitators.” The goal is that middle managers sequentially develop understanding of what will drive initial adoption of a de novo value proposition, and then what potentially modified offering characteristics are necessary for adoption by a majority of the target segment. For the process portion of our model, we build theory showing the *process characteristics* for top manager-consumer and middle manager-consumer interactions that are likely most beneficial in producing the desired outcomes. These characteristics for top manager- and middle managers-consumer interactions include: empowering consumers in the interactions, managing positive and negative consumer affect, and anticipating possible negative consumer states. The outcome portion of our model includes the development and evaluation of de novo consumer value propositions and, serendipitously, improved top manager-middle manager communications during the process. Lastly, we discuss limitations of our model, its potential usefulness for B2B as well as B2C

firms, and implications for future research. Thus, we take a step toward a more focused approach—that is, one more like using a rifle rather than a shotgun—in specifying top manager-consumer and middle manager-consumer interactions for developing more effective de novo consumer value propositions.

Keywords: top managers, value propositions, potential consumers, established firms.

*If I had asked people what they wanted,
they would have said “faster horses!”*
—attributed to Henry Ford

*It's really hard to design products by focus groups. A lot of times,
people don't know what they want until you show it to them.*
—Steve Jobs (BusinessWeek, 1998)

New, demand-side consumer value propositions are challenging many 20th Century assumptions about the fundamental natures of capitalism and firm strategy (The Economist 2015). Companies like Airbnb, Feastly and Uber have spurred consumers toward previously unthinkable actions like using strangers' bedrooms or dining rooms and riding in strangers' cars (Tanz 2014). These rapid transformations occurred while established firms like Kodak, Blockbuster and Nokia's mobile division were unable to address the more slow-moving changes in their industries. Why?

As the above epigrams from Henry Ford and Steve Jobs suggest, direct participation by top managers (TMs) in the initial ideation phase of de novo consumer value proposition development often may be necessary for strategic success. Still, the TM-focused innovation literature has emphasized TMs establishing a culture that allows middle manager-championed ideas to “bubble up” from lower levels in the organization (e.g., Burgelman 1983; Burgelman and Grove 2007). Although TMs are the decision makers, they are not idea initiators. Relatively little attention has been paid to how TMs might participate more directly in driving innovations (Casteñer and Yu 2017).

Yet new consumer value propositions are exceedingly difficult to identify and successfully develop, especially for established firms (Christensen 1997; Danneels 2002). Breakthroughs in consumer value creation often are seen clearly only *after* the fact, when an “innovation shock”—like Ford's Model T, or Apple's iPhone, or Pokémon GO—spurs unexpected demand because consumers covet a specific combination of product or service

features (Argyres, Bigelow, and Nickerson 2015). Nonetheless, TMs and middle managers (MMs) must make decisions regarding the development, evaluation and implementation of novel consumer value propositions *before* demand outcomes are known, and TMs and MMs each face unique obstacles in pursuing breakthrough innovations. TMs' past successes and high information loads can narrow their focus to existing products and competitors and to the more certain gains from incremental advances (Danneels 2002; Eggers and Kaplan 2013; Garg, Walters and Priem 2003; Hambrick and Fukutomi 1991; March 1991; Ocasio 1997; Vouri and Huy 2016). Therefore, TMs can be reluctant in pursuing true breakthroughs. MMs play crucial roles in evaluating and championing ideas from below and in implementing TMs' decisions (Burgelman 1994; Floyd and Lane 2000; Kaplan *et al.*, 2009), yet MMs often can be reluctant in communicating concerns to powerful TMs (e.g., Huy and Guo 2017; Vuori and Huy 2016). These tensions lead directly to our research questions: first, "*Which potential consumers are most likely to provide knowledge that can help a firm's TM strategists to develop effective de novo consumer value propositions, and why?*"; second, "*Which potential consumers are most likely to provide knowledge that can help a firm's MMs to effectively evaluate and implement de novo consumer value propositions?*"; and third, "*What processes could be used by TMs and MMs to best locate and interact with the most appropriate potential consumers?*"

Our theory building focuses on TM strategists, MMs and *potential* consumers in markets *not currently served by the firm*. This distinguishes our work from what may at first appear to be related scholarly literatures. For example, von Hippel's (1988; 2005) pioneering work on user innovation examines how and why a product's *current* users—be they professionals or consumers—decide to develop a new product or service themselves to fill needs that firms have yet to anticipate, have ignored for a lack of demand, or have not yet figured out how to

address (Chatterji and Fabrizio 2012). We examine instead how a firm's strategists can improve their own creativity in new value proposition development. Similarly, contrary to marketing research examining a firm's "orientation" toward customers, markets or service (e.g., Kholi and Jaworski 1990; Narver and Slater 1990; Vargo and Lusch 2004), our emphasis is on expanding TM strategists' and MMs' understandings of specific potential consumer demand segments at a granular level. Our level of analysis is the firm's TM strategists and MMs, rather than functional-level marketing activities like focus groups, customer surveys or empathic design techniques from consumer observation (e.g. Leonard Barton and Rayport 1997). We discuss instead TMs' development of and choice among new strategic initiatives. Our theory also is different from supply-side approaches like the pioneering "entrepreneurial bricolage" work of Baker and Nelson (2005), wherein existing, unused resources are put to new uses by serving well-established, commodity markets. The causal order in our theory is the opposite: first, established firm's TMs (or nascent entrepreneurs) co-develop a new consumer value proposition with potential consumers, and only then do the MMs (or entrepreneurs) evaluate the resources needed to deliver the intended value and, thereby, determine delivery feasibility and profit potential (i.e., value capture by the firm; Gans and Ryall 2017). This causal order matches the one Amazon's Jeff Bezos advocated 2008 when discussing then-ongoing, large-scale innovations like the Kindle, Web services and Amazon Prime—none of which was an established success at that time. Bezos expressed his faith in starting with the needs of potential consumers first and, only then, identifying Amazon's skill gaps in filling those needs. For the Kindle specifically, Bezos said: "If we [had] set our strategy by what our skills happen to be rather than by what our customers need, we never would have done it. We had to go out and hire people who know

how to build hardware devices and create a whole new competency for the company” (Bloomberg 2008).

The nascent consumer trait-process-outcome theory we develop in answering our research questions is critical for strategy scholars and practitioners. First, it helps (re)align strategy theory with practice, which always has considered consumers’ perspectives as relevant for new idea generation and, ultimately, firm success (Drucker 1954; Priem 2007). In this respect, a consumer perspective creates a bridge between theory and practice (e.g., Ritter & Lettl 2018). Second, our theory moves beyond the general idea that consumers could play some role in generating high-potential, de novo consumer value propositions that could drive new strategies, toward uncovering *which* consumers, specifically, are likely to be most useful for interactions with both TMs and MMs, and through what processes that could occur. Thus, we offer a “rifle” rather than “shotgun” approach to selecting and interacting with potential consumers. Third, our theory disentangles how consumer types and interaction processes might vary across TMs and MMs.

We contribute to several academic literatures. For the strategy and strategy process literatures, our model shows one way that TM strategists and MMs might enhance their potential for ideating, evaluating and implementing superior de novo consumer value propositions. For the strategy and leadership literatures, we move beyond work identifying CEO exceptionalism (Norburn 1989) or the need for leader creativity (Sternberg 2007) toward specifying how “regular” leaders (i.e., other than Ford, Jobs or Bezos) may develop more effective strategic initiatives for their firms. For the strategy process and organizations literatures, we offer a way in which TMs and MMs of established firms might overcome barriers to communication (Vuori and Huy 2016) and the inability to step outside their own niches in implementing innovations (Danneels 2002). Finally, for the ambidexterity literature

(O'Reilly and Tushman 2013; O'Reilly and Tushman 2016) and the emerging “optimal distinctiveness” literature (Zhao, Fisher, Lounsbury and Miller 2017), we identify specific types of consumers who may be useful in exploring optimal distinctiveness and how TMs and MMs might best interact with them.

Still, our theory—like most—is more useful in some contexts than in others. Using potential consumers in co-developing de novo value propositions is likely to be most effective in differentiated product and service markets, because of the many opportunities for new value creation, and least useful in commodity markets. Moreover, our theory is likely to be most needed by established incumbent firms—the type we emphasize in this article—because of their well-documented problems in developing new value propositions on their own (e.g., Danneels 2002) and responding to challenges from the disruptive innovators (e.g., Christensen and Bower 1996; O'Reilly and Tushman 2016). Nonetheless, our theory also can be applied to other firm types, ranging from SMEs to entrepreneurial startups to nascent entrepreneurs, when these entities compete in contested markets with differentiated products or services. Clearly, though, established firms' TM strategists and MMs must “up their games” in responding to change-making disruptions and, potentially, starting them. Yet must every TM and MM be a “great leader” who possesses the unusual creativity of a Ford or Jobs or Bezos, or are there ways of helping other TMs and MMs to develop, evaluate and implement new consumer value propositions that are effective and feasible? We offer one option: increased direct contact with specific potential consumers.

BACKGROUND

Top managers (TMs) make critical decisions about which strategic initiatives to pursue for firm startup, renewal or expansion, and which to forego. When these decisions involve potentially “breakthrough” innovations, TMs must understand how de novo consumer value

propositions—represented by alternative new products, new services, new combinations of products and services, and even new markets (Schumpeter 1934)—are likely to be received by targeted consumers (Priem, 2007; Schmidt, Makadok and Keil 2016).

This imperative notwithstanding, TMs face obstacles in the ideation and development of novel consumer value propositions. One is that TMs often focus narrowly on their current direct competitors (Vuori and Huy 2016) and the more-certain gains from incremental advances, instead of on less-certain gains from distant-knowledge breakthroughs (March 1991). In fact, TMs often do not possess the “ambidextrous” abilities that allow them to combine exploitation with exploration (Smith and Tushman 2005). Another obstacle is narrow, industry-focused knowledge bases that make it hard for TMs to see how they could create consumer value in other, even adjacent, industries (Danneels 2002). As a result, the competence-destroying nature of many consumer value creation breakthroughs favors new entrants vis-à-vis incumbents, because incumbents’ attempts at innovation rely on assets and knowledge that often are distant from de novo value propositions (Tushman and Anderson 1986; Anderson and Tushman 1990). Indeed, the literatures on disruption (Christensen and Bower 1996; Christensen 1997) and innovation (Smith and Tushman 2005; O’Reilly and Tushman 2016) document how difficult it is for incumbents to combine their mainstream market knowledge with new knowledge from potential consumers that could contribute to new consumer value propositions. Another obstacle is structural, from inside the firm. The high-power positions TMs hold relative to MMs can make MMs reluctant to offer TMs accurate information about consumer value creation opportunities and their feasibilities (Vuori and Huy 2016). Yet another obstacle is TMs’ prior successes, which can make them unwilling to undertake big changes (Eggers and Kaplan 2013; Hambrick and Fukutomi 1991) and can further remove them from consumers’ day-to-day concerns (Prandelli, Pasquini and

Verona 2016). Still another obstacle is TMs' high information loads, which require choices concerning where attention should be directed (Garg *et al.* 2003; Ocasio 1997). And even when a firm's TMs *do* pursue value proposition innovation by soliciting ideation inputs from consumers, ideas from more distant domains tend to be attended to far less often than ideas from nearer domains. This "crowding out" effect is greater the larger the number of suggestions received (Piezunka and Dahlander 2015). In sum, while firm members expect TMs to interpret the firm's environment (Eggers and Kaplan 2013; Vuori and Huy 2016), TMs face barriers—some self-created—that limit their ability to identify new consumer value propositions.

Because our theory draws on literatures with differing lexicons, we must define key terms early on. A *value system* (Porter 1985) comprises those activities, usually performed by a series of firms, that transform raw materials into products or services for end users. This encompasses broader groupings of firms that deliver value propositions to consumers—for example, what Gans and Ryall (2017) call *value networks* and what Adner (2017) labels *business ecosystems*. We follow Priem (2007) in defining *consumers* as the end users of a value system (i.e., purchasers in B2C transactions); intermediate, B2B purchasers in a value system instead are *customers* but they are not consumers. *Potential consumers* are those who are not now but may become a firm's or value system's consumers when a firm moves into a new product, service or market arena. *Value creation* is determined by consumers' expectations of the benefits they will receive from a purchase, represented by willingness-to-pay (WTP). Table 1 provides specific definitions and supporting literature that differentiates the types of potential consumers used in our model from definitions provided in disparate literatures, and clarifies the key traits we examine. We use the term "consumers" throughout this article for ease of exposition, unless the prior research we cite is clearly focused on B2B

customers. Similarly, we use the term “*potential* consumers” to emphasize that looking beyond a firm’s existing consumers is necessary in developing de novo consumer value propositions, particularly given TMs and MMs tendencies to rely on the status quo. We address in the discussion section the issues of how and when our model could apply in the B2B context, plus when potential and existing consumers might be used together as co-producers of new ideas for value creation.

 Insert Table 1 about here.

To summarize, strategic decisions are those highly important and complex organizational choices that: involve multiple functions in strategic (re)positioning under ambiguous information, require a substantial commitment of resources, and affect firm performance (Eisenhardt 1989). These decisions most often involve the development of, or adjustments to, the consumer value proposition offered by a firm or value system (Chesbrough and Rosenbloom 2002; Gans and Ryall 2017; Priem 2007; Teece 2010). Our trait-process-outcome theory on consumer-assisted de novo value proposition development focuses on two key relationships—that of TMs with potential consumers and that of MMs with potential consumers. We turn to these relationships next.

The Roles and Behaviors of TMs and MMs

The upper echelons literature (Hambrick and Mason 1984) has studied TMs’ strategic decisions using two primary units of analysis—CEOs and top management teams (TMTs). CEO-focused work has examined how factors like CEOs’ cognitions, environmental scanning and pay (e.g., Benner and Tripsas 2012; Garg *et al.* 2003; Zajac and Westphal 1994) affect firm performance. TMT-focused work has explored the performance effects of within-team conflict, demographics and consensus (e.g., Amason 1996; Bantel and Jackson 1989; Dess

1987), among other issues. Overall, TMs have been identified as the firm's principal decision makers (e.g., Floyd and Lane 2000; Herrmann and Nadkarni 2014; Tripsas and Gavetti 2000), and evidence has accumulated that TMs affect firm outcomes like risk-taking, innovation and performance (Finkelstein, Hamrick, and Cannella 2009).

Because TMs play a crucial role in promoting and driving innovation, scholars have considered the effect that CEOs' and TMs' attention focus may have on firm innovation (e.g., Ocasio 1997). TMs that direct their attention toward locations that contain novel, vivid, and salient information have been shown to introduce more new products (Li *et al.* 2013). And new products are introduced faster when firms in dynamic environments are headed by CEOs with a low past focus and high future focus (Nadkarni and Chen 2014). Maula, Keil and Zahra (2013) found that TMs' heterophilous ties through corporate venture capital lead to better recognition of new business opportunities. By examining the microfoundations of TMs' strategic behaviors (e.g. Felin *et al.*, 2012; Winter 2013), these studies support the view that CEOs and TMs are elemental to strategy because they are the primary locus of knowledge in an organization (Felin and Foss 2005).

Whereas TMs focus on the strategic-level external environment and set the internal context for innovation, MMs link operational managers with TMs (Floyd and Lane 2000; Taylor and Helfat 2009) and play a fundamental role in resource allocation (Bower, 1970). MMs filter which market information, ideas and new product opportunities from operational managers reach TMs. MMs also use their technical competencies to develop "autonomous strategic initiatives" that "may engender unanticipated innovations that are outside the scope of the official corporate strategy" (Burgelman 1994: 48). MMs build internal context by "upscaling" or combining these initiatives, while TMs bring external context to bear in evaluating "how these initiatives fit into, or reshape or even radically change, the corporate

strategy going forward” (Burgelman and Grove 2007: 975). MMs also may use their authority to allocate the greatest resources to those projects they think will be best received by TMs, and less to others (e.g., Bower 1970; Burgelman 1983). These activities reflect MMs’ roles as champions, integrators, facilitators and implementers for new opportunities (Floyd and Lane 2000). When strategic change is gradual and related to a firm’s current business, TMs and MMs in these roles can, and often do, work well together. Nonetheless, there are several obstacles that can reduce the effectiveness of these TM-MM relationships, and of TMs and MMs individually, when it comes to developing de novo consumer value propositions.

Barriers to Developing de Novo Value Propositions

Prior success. Sustaining competitive advantage is a complex and difficult task (e.g. D’Aveni, Dagnino, and Smith 2010; Teece, Pisano, and Shuen 1997; Tushman and Anderson 1986). The prior successes of established firms can lead to a “success trap” (e.g. Audia, Locke, and Smith 2000; Amason and Mooney 2008), wherein TMs and MMs facing market changes persist too long on the path that led to prior successes because they are more comfortable staying in established niches (Danneels 2002). TMs and MMs also may wait to explore new strategies until performance dips below aspiration levels (Greve 2002), which can be too late. Rhee and Kim (2010) argue further that the timing of success matters, with early initial success being more detrimental to future performance and survivability than later initial success. In short, being successful can have unexpected negative consequences. More generally, managers’ risk aversion leads them to favor the familiar and to search for solutions near to existing ones, which makes radical new ideas less likely (Ahuja and Lampert 2001; March 1991). Thus, prior successes often cause risk-averse managers to pursue the tried-and-true rather than develop risky de novo consumer value propositions.

TM-MM power differences. Companies' hierarchical structures result in power and status differences between TMs and MMs (Magee and Galinsky 2008). CEOs and TMs are the most powerful individuals in a firm, having decision control and the greatest say in allocating valuable resources. MMs have less power, but nevertheless can filter what comes to TMs' attention and can make specific resource allocation choices within the broader allocations specified by TMs (e.g., Floyd and Lane 2000; Galinsky *et al.* 2006). Thus, "whether TMs perceive the need for change and what kind of change they think is appropriate may depend on how MMs interpret the situation" (Floyd and Lane 2000: 163). The filtering role of MMs is seen in Christensen and Bower's (1996) work on disruptive innovations in disk drives; when TMs decided about programs recommended by MMs, "Projects targeted at the known needs of big customers in established markets consistently won the rational debates over resource allocation" (Christensen and Bower 1996: 211).

Beyond the success trap and straightforward TM risk aversion, Vuori and Huy's (2016) research on Nokia's cellular phone unit from 2005-2010 provides insight into power and status effects on TM-MM relationships in established firms facing elemental external threats. Nokia's TMs—with low technological competence—focused their attention externally on existing competitors, potential competitors like Apple and Google, and big customers like AT&T and Verizon, *but not on consumers*. Afraid that Nokia would be unseated as the dominant industry incumbent, TMs requested new phones at an ever-faster pace based on the desires of AT&T and Verizon. Despite their fears, TMs publicly downplayed problems to reassure shareholders and employees (Vuori and Huy 2016: 29). They told MMs, however, to focus internally on implementation and meeting the schedules dictated by TMs. MMs—with higher technological competence—focused their attention on TMs' increasingly strident demands. Fearful TMs pushed back strongly against MMs who asked to extend a deadline.

One MM who gave his unvarnished view “was ‘completely sidelined’ ... and his views—as well as the views of the few other critical MMs—were dismissed during collective interaction processes” (Vuori and Huy 2016: 30). To satisfy the TMs and maintain their own status, tech-savvy MMs responded with over-optimistic reports that gave both groups temporary emotional relief. Nokia cellular illustrates why TMs need knowledge of technology and consumers to fulfill their strategic roles.

Distance from potential consumers. CEOs at established firms—and, to a lesser extent, other TMs—are remunerated with salary, bonuses, stock options, and stock grants. They often receive personal benefits that can include (in declining order of frequency): paid retirement supplements, life insurance and financial advising, a company car or car allowance, country/social club dues, company aircraft, loans, spousal travel and an apartment (Schwab and Thomas 2006: 265; Seo *et al.* 2016). Such perquisites are designed to allow TMs’ to focus fully on their firms, without personal worries (Reda, Schmidt and Glass 2015). Thus, many TMs live “in a bubble.” Plus, Mizruchi (2013) argues that since the 1940s the U.S. corporate elite has become less involved as direct leaders in civic matters, replacing active civic involvement with monetary contributions to political and social ends. These factors suggest that TM decision makers may have become less able to take the perspectives of potential consumers. Prandelli *et al.* (2016) argue that such perspective taking is crucial if entrepreneurs are to identify new opportunities. Their scenario study showed that MBA participants randomly primed to take a user’s perspective produced higher-quality opportunity suggestions than did those with “be objective” priming. Also, Gruber, MacMillan and Thompson (2013) found the perspective taking-opportunity recognition relationship is stronger for those with greater prior knowledge of the marketplace. In sum, the absence of consumer information, TMs’ distance from consumers and the inability to take the

perspectives of prospective consumers all reduce TMs' capacity to develop and assess new consumer value propositions.

CONSUMER-ASSISTED DE NOVO VALUE PROPOSITION DEVELOPMENT

The theoretical model we now develop shows *which types* of potential consumers are likely to be most useful in: (a) helping firms' TMs to develop de novo consumer value propositions that create previously unknown value for consumers, (b) helping firms' MMs to effectively evaluate and implement those new value propositions, and (c) *which processes* are likely to be effective for finding and interacting with these consumers. We draw upon the literatures in management, consumer behavior, creativity and power because they are especially helpful in pursuing these goals.

Despite identifying TMs as crucial actors who establish an internal context supporting innovation by others, the management literature is less clear on the specifics of TMs' direct role(s) in the creation of de novo value propositions. Yet TMs must at least be able to select among the best opportunities, and at best could develop and drive de novo consumer value propositions as Ford, Jobs and Bezos did—even when consumers themselves don't know what they want. And while TMs need information about consumer preferences when selecting among alternate opportunities, to ignite the creative process leading to de novo value propositions TMs must themselves interact with distinct *types* of potential consumers in particular *ways* so as to identify new value opportunities for the firm that may tap consumers' latent needs.

The obstacles highlighted above—the success trap, TM-MM power differences, and TMs' distance from consumers—show how difficult this process can be. Yet they also suggest a valuable role for potential consumers in fostering TM strategists' creativity in developing de novo consumer value propositions. Potential consumers can bring TMs

knowledge and creative ideas that are distant from what TMs currently know (Maula, Keiland and Zahra 2013). This increases the likelihood of TMs developing more, and more creative, de novo value propositions, and assessing them well. The core of our effort is to show *which types* of potential consumers can best help TMs and MMs, *how* their knowledge may be helpful, and possible interaction *processes*. Our trait-process-outcome model is presented in Figure 1.

 Insert Figure 1 about here.

The Development of New Consumer Value Propositions: TMs and Potential Consumers

TMs and creativity. Creativity encompasses the generation and selection of novel and useful ideas (Amabile 1996; Zhou and Shalley 2003). Thus, creative processes shape both idea novelty (i.e., the cognitive dimension of breakthroughs) and value realization (i.e., the economic dimension of breakthroughs) (Kaplan and Vakili 2015). Literature linking creativity to innovation has emphasized the underlying psychology of creative personalities and of creative processes (for reviews, see Feist 1998, 1999; Simonton 2000). TMs are likely to be quite creative, in part because they have power. Powerful people engage in more creative thinking, especially when their creativity facilitates goals (Duguid and Goncalo 2015; Gervais *et al.* 2013). Moreover, powerful individuals like TMs express more novel ideas and are better able to resist conformity pressures than are the less powerful, because they less influenced by others' judgments (Dittes and Kelley 1956; Galinsky *et al.* 2008). TMs' high status also contributes to this tendency. Somewhat counterintuitively, the tendency to be less influenced by others' judgments also helps TMs to be *more* receptive to others' novel ideas. Powerful TMs are likely to give novel ideas a careful hearing, even if they are immediately discounted

by others (Galinsky *et al.* 2008). In sum, most TMs have the capacity to be creative and to respond thoughtfully to others' novel ideas.

TMs also have limitations in developing new consumer value propositions, because power is associated with difficulty in taking others' perspectives. Powerful individuals show reduced accuracy in assessing others' emotions and thoughts (Galinsky *et al.* 2006). This is relevant for TMs, especially when generating new consumer value propositions. Taking the perspective of consumers also is crucial in finding new opportunities (Prandelli *et al.* 2016). TMs' inability to take potential consumers' perspectives can hamper TMs in developing and evaluating new value propositions.

Consumer characteristics for TM interactions. The literatures on crowdsourcing and openness have explored the issue of exploiting suggestions from outside the firm's boundaries when looking for solutions to current problems (e.g. Jeppesen and Lakhani 2010). There are three reasons why opening the idea generation process for de novo consumer value propositions to *all* potential consumers, or to "average" consumers, or to those who self-select in, is not appropriate for spurring TMs' creativity. First, Piezunka and Dahlander (2015) recently examined the effectiveness of "open calls" for ideas, intended to attract knowledge distant from that within the firm. They found that when companies handle the resulting deluge of submitted ideas lower-level managers use a cursory sort that weeds out the novel, distant ideas so TMs and MMs can focus instead on incremental ideas. This "crowding out" effect defeats the original purpose of the open calls. Second, TMs' time is valuable (e.g., Garg *et al.* 2003) and they likely have little patience in searching for an informational "gold nugget" while interacting with randomly selected groups of potential consumers. Third, studies show the importance of tacit knowledge; that is, the type of knowledge that is intuitive, inarticulable, and difficult to formalize enough to communicate verbally. Such knowhow

must be learned through collaborative experiences if TMs are to become more innovative in developing and evaluating new value propositions (Cao, Maruping, and Takeuchi 2006; Cavusgil, Calantone, and Zhao 2003; Mehra *et al.* 2006).

For these reasons, it is necessary to target the specific *types* of potential consumers who are most likely to stimulate TMs' creativity, and then to engage in conversations with those consumers so TMs can gather the tacit knowledge that is likely to lead to higher levels of creativity and innovation. Indeed, tacit knowledge allows TMs to better understand latent consumer needs, consumer decision making processes, and therefore new market opportunities (Harmancioglu *et al.* 2010). Accessing tacit knowledge implies TMs must engage in formal and informal (i.e., interpersonal) relationships with potential consumers and other stakeholders that involve new types of interactions. As shown by Harmancioglu *et al.* (2010), TMs are in a better position than other employees to build and nurture trust and commitment in consumers because TMs control resources and can direct innovation strategy and trajectory. Although domain-specific knowledge is essential, it is not sufficient for developing creative ideas; an individual can be an expert without being creative (Simonton 2000). Creative people possess characteristics like independence, wide-ranging interests and openness to new experiences (e.g., Simonton 2000; Batey and Furnham 2006), and creativity can be positioned on a continuum ranging from incremental to radically new (Dane 2010; Mumford and Gustafson 1988). Our interest is in high levels of creativity only, to understand how new-to-the-world consumer value propositions can be generated by TMs and potential consumers, together. Research on individual creativity suggests that consumers who could best spur TMs' creativity would likely possess a mixture of characteristics related to their own creativity, including: (a) a willingness to take risks, (b) an emergent nature, and (c) non-conformist behaviors. We next explain these characteristics, which identify potential

consumers who should be engaged by TMs interested in developing de novo value propositions. The aim is for TMs to capture the right tacit information through direct interactions and collaborative experiences with the right potential consumers.

Willingness to take risks. The willingness to take risks is an important antecedent of individual creativity (e.g. Shalley, Zhou, and Oldham 2004; Dewett 2006, 2007; Eisenman 1987). New ideas and behaviors are viewed as risky because they deviate from the status quo (George 2007; Audia and Goncalo 2007). Creative people tend to “produce product [ideas] that are good but that are not exactly, and often not even approximately, what other people expect or desire” (Sternberg 2001: 361). Creativity is a sub-set of problem solving that taps different adaptive-innovative cognitive styles (Kirton 1976). The more creative you are, the more you tend to detach a problem from the way it is customarily perceived. This produces unexpected solutions that are seen by others as different. Such radically new, divergent ideas offer far more uncertainty and greater challenge to the status quo than do incremental new ideas (Audia and Goncalo 2007; Zhou and George 2001).

Generating breakthrough ideas therefore requires a willingness to take risks by the individual(s) involved (Madjar, Greenberg, and Chen 2011). Such risk propensity is a key predictor of highly uncertain entrepreneurial activity (Zhang and Arvey 2009). Moreover, the willingness to take risks mediates the relationship between intrinsic motivation and creativity for R&D employees (Dewett 2007). Amabile *et al.* (1996) highlight risk encouragement as a key factor that influences creativity. This is important in organizations because the more radical an idea the riskier it is, and the more likely managers are to reject it (e.g. Ahuja and Lampert 2001; Mainmelis 2010).

We argued earlier that TMs are likely receptive to novel ideas because of their power and high status. This is why direct contact between TMs and potential consumers who possess a

willingness to take risks is so important: TMs' receptiveness to novel ideas, together with risk-taking potential consumers' willingness to offer them, provides a potent combination for generating de novo consumer value propositions. MMs, on the other hand, are less likely to forward radical new ideas than incremental new ideas to their TMs. Thus,

Proposition 1. TMs will generate more, and more creative, new consumer value propositions when they engage with potential consumers who are themselves creative risk-takers.

An emergent nature. The most helpful consumers for developing new product concepts possess an *emergent nature*, defined as “a unique capability to imagine and envision how concepts might be further developed so that they will be successful in the mainstream marketplace” (Hoffmann, Kopalle, and Novak 2010: 855). Potential consumers with emergent natures differ from lead users because the qualities of emergent natures can be applied to multiple domains, whereas lead users are expert in one domain (e.g. Morrison, Roberts and von Hippel 2000). Moreover, the emergent nature concept differs from consumer novelty-seeking (Hirschman 1980; Midgley and Dowling 1993; Steenkamp, Hofstede, and Wedel 1999), because novelty-seeking is related to the purchase of new products, whereas an emergent nature is useful for idea development.

The ideation and development skills of potential consumers with emergent natures are due to a set of underlying personal traits and capabilities that include: (a) openness to new experiences, (b) an intellectual self-focus, (c) optimism and (d) information processing abilities. The emergent nature personal trait *openness to new experiences and ideas* is associated with divergent thinking (McCrae 1987). People are more likely to make new and valuable connections when they are, and have been, open to many new experiences and ideas. This “knowledge at hand” forms the basis for a flexible and rather unstructured problem-solving process, wherein the introduction of a new element facilitates evolving new

alternatives that are combined with previously established principles—i.e., through divergent thinking (Guilford 1967). Another emergent nature trait is an *intellectual self-focus*, which is positively associated with reflection and the number of network associations in memory. Another is *optimism*—the tendency of an individual to believe that tomorrow things will be better than today. This trust in the future pushes people to envision new things and develop novel solutions. High *information processing ability* is also found in consumers with emergent natures; they are good in both rational processing (i.e., analytical, logical, and causal) and in the experiential thinking style (i.e., intuitive, affective, and holistic) (Epstein *et al.* 1996, Smith and DeCoster 2000). This combination enables consumers with emergent natures to understand the utility of a new idea both rationally and intuitively. In sum, the personal traits and processing abilities of potential consumers with emergent natures—especially their ability to engage in divergent thinking, envision and link new concepts, and to further the development of new concepts—indicate that they are likely to be helpful to TMs in the ideation and development of new consumer value propositions. Thus,

Proposition 2. TMs will generate more, and more creative, new consumer value propositions when they engage with potential consumers who have emergent natures.

Intentionally non-conformist. Consumers overall are well-known for their identity-seeking, conformist behaviors (e.g., Holt 1995; Hill 2015). Moreover, middle-status people see conformity as a means to gain acceptance and protect status, while reducing the threat of sanctions (Phillips and Zuckerman 2001; Roethlisberger and Dickson 1939). The Nokia cellular case (Vuori and Huy 2016) shows that MMs' creative interactions with TMs were stifled, in part, by MMs' desire to maintain status inside and outside the organization. A similar scenario could play out if “average” consumers were selected to interact with high-power, high-status TMs; such consumers likely will have relatively few novel ideas and will keep those ideas to themselves.

Yet some consumers are true *non-conformists* who don't always adhere to their group's norms. Bellezza, Gino, and Keinan (2014) conducted a series of studies examining the status and competence inferences made by observers of non-conforming consumer behaviors. They found that non-conforming behaviors deemed by observers to be *unintentional* lead to negative attributions regarding the violator's status and competence. When a non-conforming behavior was classified as intentional, however, observers judge the violator to have higher status and more competence than non-violators (i.e., than those who conform to norms). Bellezza *et al.* (2014) label this the "red sneakers" effect. That is, someone who intentionally wears a business suit with red sneakers to a formal business function is assumed to have high status and competence, because he or she can take the risk of not conforming. Such confident, non-conformist consumers are likely to have new and unusual ideas and be willing and able to share them with TMs as part of the ideation and development process for new consumer value propositions. Thus,

Proposition 3. TMs will generate more, and more creative, new consumer value propositions when they engage with potential consumers who are intentional non-conformists.

Contributions to New Consumer Value Propositions: MMs and Potential Consumers

MMs and creativity. Conformity is useful for routine tasks but is not usually beneficial for creative thinking (Ford, 1996). Because creative ideas are initially out of the ordinary, they often spur detrimental pressure to from the group majority that can reduce creative expression (e.g., Woodman, Sawyer, and Griffin 1993; Goncalo and Duguid 2012). This pressure to conform is felt more by people who have self-doubt (Campbell, Tesser, and Faurey 1986). MMs are especially susceptible to conformity pressure squelching creativity, for two reasons. First, it is difficult to speak to more powerful individuals when one is saying something they'd prefer not to hear and such speech may result in sanctions (Vuori and Huy 2016).

Second, individuals with high or low status feel less pressure to conform than do those with mid-level status, because those with mid-level status perceive themselves as having more to gain or lose. Thus, “The prospect of being criticized and negatively evaluated for suggesting a creative idea may be particularly salient to individuals with middle status” (Duguid and Goncalo 2015: 591). In sum, because MMs have less power than TMs, and because they have mid-level status, they likely feel constrained in suggesting creative ideas to those at higher hierarchical levels, like TMs (Duguid and Goncalo 2015).

Other studies, however, point to MMs’ crucial role during the evaluation and implementation stages of new value proposition development. MMs’ technological competencies are essential for evaluating and implementing new opportunities (Burgelman 1994; Floyd and Lane 2000). Kaplan and colleagues (2009) argue that conformity can facilitate crucial group processes for effective idea implementation, such as team coordination, information exchange, conflict management, and collective efficacy. This is where the MM’s role is vital. After TMs have reached high levels of novelty in value proposition ideation, there remains a need to evaluate the potential economic value that can be created with an idea via alternate implementation plans. To better achieve this goal, MMs need to interact with *different* types of potential consumers than those who interacted previously with TMs. We now turn to the specific characteristics of these consumers.

Consumer characteristics for MM interactions. Early literature on new product adoption divided consumers’ adoption behaviors by time, as early or late adopters (Rogers 1962; Bass 1969). More recent literature analyzes consumers according to the drivers of their adoption behavior, under the assumptions that some consumers are more “in-touch” with new developments than are others and that the in-touch consumers’ behaviors have an outsized influence on others’ adoption decisions. This social contagion view divides consumers into

“influentials” and “imitators” (Van den Bulte and Joshi 2007; Moore 1991). Given MMs’ roles, their interactions with potential consumers likely would be most beneficial if they would focus first on a target market’s influentials—i.e., the subset of more adventurous consumers who have central roles in social networks—and second on the less-adventurous imitators who make up the largest part of potential adopters in most segments. The goal of MMs’ interactions with potential consumers is to identify and better understand the adoption logics—i.e., the multi-attribute decision models (Priem 2007)—used by each group of potential consumers and the benefits each group views as most important.

Influentials. Consumer influentials can be identified according to their position in a social network—those occupying structural “holes” (Burt 2005) have, on average, greater influential power (Katona, Zubcsek, and Sarvary 2011). Because they access knowledge from wide-ranging sources due to their advantageous network positions, many influentials have “a high level of domain-specific knowledge acquired through experience” (Dane 2010: 580). Influential potential consumers’ domain expertise can help tech-savvy MMs better evaluate the implementation feasibility of a new idea (Grant 2016). Influentials’ external knowledge can be particularly valuable to the firm because it is different from what is already known by the firm’s employees (Chatterji and Fabrizio 2014).

Yet consumer influentials offer more to MMs than domain expertise. Their consumer influence is based on a combination of three personal and social factors: (a) their personification of certain values (who one is), (b) their competence (what one knows), and (c) their social location (who one knows) (Goldenberg *et al.* 2009; Weimann 1991). The first factor is associated with personal traits, the second involves domain-specific knowledge, and the third is associated with social capital (Burt 1997). These factors, together, are why influentials are the consumers whose behavior is imitated in the marketplace. If influentials

choose not to adopt, it is unlikely that imitators will “pick-up” an innovation on their own. Therefore, MMs understanding the adoption logic of influentials is especially important if a firm is to successfully evaluate and introduce a new consumer value proposition. Without knowing what product, service or product-service bundle features will increase influentials’ adoption of the new value proposition, even a great new value proposition may not be successful. Thus,

Proposition 4. MMs will better evaluate and implement new consumer value propositions when they engage first with consumer influentials.

Imitators. The next step for MMs in evaluating and implementing the value creation and value capture potential of a new value proposition is to understand the adoption logics of later-adopting consumer “imitators.” These consumers—generally less innovative, less willing to take risks, and most often not opinion leaders—form by far the largest segment of a target market and, therefore, contribute greatly to the ultimate success or failure of the new value proposition. Imitators adopt an innovation only after adoption by influentials—to reduce risk—and, if then, only when the value proposition provides imitators with benefits they desire. Therefore, it is equally important for MMs to understand imitators’ adoption logics. MMs likely will receive extra insight from imitators, though, because these ordinary users often help generate more valuable incremental ideas which score high in terms of consumer benefit (Kristensson, Gustaffson, and Archer 2004; Poetz and Schreier 2012).

In sum, influentials are more likely to adopt a new consumer value proposition and their adoption influences imitators, yet imitators’ adoption depends upon the value proposition matching imitators’ adoption logics as well (e.g. Van den Bulte and Joshi 2007; George 2007; Audia and Goncalo 2007). Still, social structures drive adoption, in part, by acting on imitators’ desires to align their behaviors with those of influentials (Fisher and Price 1992; Holt 1995; Sun, Xie, and Cao 2004). Therefore, new consumer value propositions must

address influentials' adoption logics to "strike the match," but also must address imitators' adoption logics to "spread the fire" (Iyengar, Van den Bulte, and Valente 2011; Aral 2011).

Thus,

Proposition 5. MMs will better evaluate and implement new consumer value propositions when they engage next with consumer imitators.

Contributions to New Consumer Value Propositions: Processes for Finding and Engaging Potential Consumers

We have identified the distinct types of potential consumers who could usefully engage with TMs and with MMs to spur effective development and implementation of de novo consumer value propositions. The final research question is perhaps the most difficult: What processes could TMs and MMs best use to locate and interact with their potential consumer types?

Locating the Correct Types of Potential Consumers. Trends in "Big Data" computer science and social networks are increasing available information on individuals' characteristics and behaviors (George, Haas, and Pentland 2014). These tools can help firms locate the potential consumer types who best fit the needs of their TMs and MMs, whether through their own online platforms or via externally purchased data. More "on the ground" methods are identified in the literatures on "scouting units" for external industry knowledge (Monteiro and Birkinshaw 2017) and trend-setting consumers (Ghemawat and Nueno 2006). To identify trend-setting consumers, Inditex's Zara subsidiary sends scouts to universities and other "hip" areas. The idea is to spot consumers wearing fashions that are not yet for sale (e.g., those who ripped their blue jeans horizontally before jeans were available that way in stores). Consumers sporting such trends would be possible candidates for engaging with TMs. Another, more conventional approach for researchers would start with literature that includes individual measures of: risk taking, an emergent nature, and non-conformity, for TMs, and influentials and imitators, for MMs (e.g., Bellezza *et al.*, 2014; Dewitt 2007; Epstein *et al.*

1996; Katona *et al.* 2011; Zhang and Arvey 2009). This would be a more focused, but less tacit, approach to finding appropriate potential consumers for TM-consumer and MM-consumer interaction.

Engaging with Potential Consumers. Once potential consumers have been identified and selected, the processes used for de novo consumer value proposition development likely would vary by industry type and TM/MM preferences. The engagement process could range from individual, one-on-one interactions between firms' TM strategists and MMs with their respective consumer types to face-to-face, group-level discussions. Either way, these interactions could be one-off or on-going, with consumers in the latter case acting as a limited-time advisor or advisory board for TMs or MMs. Irrespective of the format, several critical psychological aspects of the TM-consumer and MM-consumer interactions must be considered before the interactions take place.

Empowering Potential Consumers. Consumers who feel empowered during an innovation's ideation and selection processes demonstrate higher willingness to pay (Fuchs, Prandelli, & Schreier 2010). Therefore, many firms' websites now offer platforms that give consumers the opportunity to contribute to business model innovations or to connect with other consumers who are interested in product improvements (Dolbec and Fisher 2015). Procter and Gamble, for instance, established their "Connect and Develop" website to enlist consumers and empower them to help in creating innovative products (Huston and Sakkab 2006). These factors suggest that potential consumers who feel more empowered during their interactions with TMs will be more forthcoming and effective in the innovation ideation process. Thus, before TMs interact with potential consumers the firm should pre-plan an engagement approach that favors consumer empowerment. Research in psychology has identified several ways of empowering consumers in the ideation process. First, showing a

clear link between a consumer's input and the final decision increases that consumer's perception of her ability to influence innovation outcomes (Spreitzer 1995). Therefore, it is important that TMs clearly link consumers' involvement in innovation to the decisions and actions the TMs decide to undertake. Second, consumers' involvement in the decision-making process leads them to feel a stronger sense of psychological "ownership" in the innovation (Pierce, Kostova, and Dirks 2003 p.86), which in turn increases consumers' attachment to the innovative outcome (Peck and Shu, 2009). And third, providing consumers with autonomy during innovation ideation tasks and expressing confidence in their performance fosters consumers' sense of accomplishment that leads to feelings of empowerment (Dong, Liao, Chuang, Zhou, Campbell, 2015; Alge, Ballinger, Tangirala, Oakley 2006; Thomas and Velthouse, 1990). With these methods of ensuring potential consumers feel empowered during their interactions with company managers, TMs striving to develop de novo consumer value propositions will be most likely to build the tacit knowledge they need to uncover latent or even unknown consumer needs. Then, TMs will be better able to "mix and match" consumers' inputs with other ideas and, ultimately, to develop more and more creative value propositions. Thus:

Proposition 6: TMs will generate more, and more creative, new consumer value propositions when potential consumers feel empowered during the engagement process.

Managing Positive and Negative Affect. Affective states—positive or negative—can affect the creativity of individuals invited to participate in an ideation process (George and Zhou 2002). Isen, Daubman, and Nowicki (1987), for example, found that positive affect induced by something as simple as seeing a comedy film or a small gift of candy can facilitate creative problem solving. Yet companies also must be aware of possible negative effects of moods and emotions on creative outcomes. Many individuals, for example, feel shame when they draw because they think they can't do it properly. This negative emotion inhibits

creativity that otherwise could be expressed through drawing. Adobe addressed this problem by developing an internet-connected stylus and ruler for drawing on iPads. One can quickly erase a “bad” drawing, which makes drawing during a creative process easier and less intimidating (Tanz 2014). In sum, firms that stimulate consumers’ positive emotions and mitigate negative emotions can better engage their creativity during new value proposition development. Thus:

Proposition 7: TMs will generate more, and more creative, new consumer value propositions when the engagement process stimulates positive emotions and mitigates negative emotions in potential consumers.

The more radical a new value proposition is, the more uncertain potential consumers are about its usefulness (Hoeffler 2003; Castano, Sujan, Kacker, Sujan 2008). This uncertainty is especially critical when MMs engage with potential consumers to evaluate de novo value propositions. Studies of consumer affect (e.g. Pham 1998; Mick and Fournier 1998) show that novelty increases risk perceptions and generates emotional responses that reduce likelihood of adoption (Wood and Moreau 2006; King and Slovic 2014). Yet such negative affect can be overcome. The Green Link parcel delivery company in Paris uses a new logistics model that leverages two factors. One is speed; bicycles beat car delivery in one of the most congested cities in Europe (Bonnor 2015). The other factor is negative emotions caused by pollution. Adopting “green” bicycle delivery turns this negative emotion into a positive one for the service’s consumers. Negative consumer response to novelty always remains a risk, however. Microsoft’s launch of Xbox One required an Internet connection (even to play offline games) and imposed restrictions on game-sharing. According to Dragilev (2013) the consumer data Microsoft gathered “suggested it made business sense to require Xbox One to have internet to protect Microsoft from piracy. (...) But somehow this data failed to predict the strong emotional reaction from customers.” (Dragilev 2013). Microsoft had to withdraw the rejected

new product features. MMs engaging with consumer influentials and imitators must anticipate uncertainty-triggered emotions prior to engagement. Thus:

Proposition 8: MMs will better evaluate and implement new consumer value propositions when they anticipate possible negative affective states before engaging with potential influential and imitator consumers.

Improved TM-MM Interactions. Communications between TMs and MMs in established firms can be challenging due to differences in TMs' and MMs' power and status. When firms are under external pressure, TMs may be less willing to listen to MMs, and MMs may be less willing to offer true opinions on feasibility and implementation (Morrison and Milliken 2000; Reppenning and Sterman 2002; Vuori and Huy 2016). Yet open communication between TMs and MMs is crucial for effective decision making (Morrison and Milliken 2000; Tost, Gino, and Larrick 2013; Smith *et al.* 1994; Wooldridge, Schmid and Floyd 2008). Raes *et al.* (2011) develop a process model of the TM-MM interface. It shows how episodes of TM-MM contact can lead to a virtuous cycle of increasing trust, participative leadership and active engagement. This increases subsequent TM-MM information exchange and mutual influencing. A counter, vicious cycle also can occur, where contact episodes reduce trust and block subsequent TM-MM communications and mutual influence (Raes and Vlijmen 2017 extend the original Raes *et al.* model).

The “outside” interactions we have outlined—between specific types of potential consumers and TMs, and between other types of potential consumers and MMs—could serve to mitigate the TM-MM communication problem when developing de novo consumer value propositions, in several ways. First, the interaction of TMs with leading-edge potential consumers likely will give TMs greater insight into potential consumers' adoption logics and thereby reduce TMs' distance from consumers in the new target markets. Second, MMs likely will gain insights from their interactions with the broader spectrum of those markets'

consumer influentials and imitators, especially concerning the different adoption logics of each group. When combined, these interactions with key consumer types can ultimately contribute to improved TM-MM communications by increasing confidence and directing the managers' attention externally, toward potential consumers. This provides confidence and an extended knowledge base for discussions about new value propositions. TMs will be more prone to listen to MMs' suggestions, because the TMs will be better able to take new consumers' perspectives (Prandelli *et al.* 2016). MMs, in turn, can use insights from their consumer interactions to better support their suggestions and ideas when interacting with TMs. The combined increases in confidence and insight for both TMs and MMs are likely to improve communication episodes and will be more likely to lead to the virtuous interface cycle identified by Raes *et al.* (2011). An added benefit is that improved communication will likely reduce TMs' and MMs' emotional responses to one another (Huy and Gao 2017; Vouri and Huy 2016) and help bridge the strategy formulation-implementation divide. Thus,

Proposition 9. TMs and MMs will communicate more effectively with one another in developing and evaluating new consumer value propositions after they have engaged with the potential consumers as specified by P1–P8.

DISCUSSION

We have built a trait-process-outcome theory showing how potential consumers can help TMs and MMs in established firms better complete their crucial strategic roles of developing, evaluating and implementing strategies based on high-potential, de novo consumer value propositions. While TMs must identify and make decisions about breakthrough value propositions, they tend to rely too much on the tried-and-true because change is risky and they often are unable to take the perspectives of potential consumers. We have identified the characteristics of specific *potential* consumers—those who are willing to take risks, have an emergent nature, and are intentionally non-conformist—who are most likely to aid TMs in co-producing insights needed to develop high-potential, de novo consumer value propositions.

We also have identified the characteristics and interaction sequence for potential consumers— influentials and imitators—who are most likely to aid MMs in evaluating, (re)shaping and bringing to fruition strategies founded on high-potential, de novo consumer value propositions. Moreover, we have taken steps toward determining how firms might locate potential consumers with the right characteristics, and how the TM-consumer and MM-consumer interaction processes may best be structured. Lastly, we argue that TM-consumer and MM-consumer interactions likely will have salutatory, follow-on effects in improving TM-MM communications about new, consumer-focused strategic alternatives.

Contributions

Our novel theory of TMs and MMs developing de novo consumer value propositions through their interactions with the “right” consumers in the ideation, evaluation and implementation processes may, at first, appear to sit in a unique niche in the management literature. It contributes, however, to several established literatures. For the strategy process literature (e.g., Hutzschenreuter and Kleindienst 2006; Langley *et al.* 2016), our model highlights established firms’ TMs’ critical, cognitive role in avoiding overreliance on past success while simultaneously being proactive in generating breakthrough ideas. The cognitive content of this role is based in part on TMs engaging in recursive and constructive discussions with those potential consumers who can best help TMs envision new market trajectories. We also show how the MM’s role can be supported by interactions with different potential consumers, in an influentials-then-imitators sequence, to best evaluate and, if worthy, implement a breakthrough strategy.

Our theory also contributes to the innovation literature, in part because it was motivated by studies on competence-destroying innovation (e.g. Tushman and Anderson 1986; Anderson and Tushman 1990). We have focused on innovation that is competence-destroying

and, as in some of these works (e.g., Tripsas and Gavetti 2000), we are interested in unveiling the cognitive mechanisms behind the development of high-potential de novo consumer value propositions. We contribute by showing how firms may proactively develop innovations, rather than just reacting to exogenous shocks. More important, we add a TM-side, upper echelons aspect that shows how the generation of de novo consumer value propositions can be more than a bottom-up process where TMs mostly select from among ideas that “bubble up” through MMs (see, e.g., Casteñer and Yu 2017). Further, we distinguish between the creativity demanded of TMs—which involves the creation of and selection among new ideas representing high-potential de novo consumer value propositions—and the creativity demanded of MMs, who are involved with more incremental idea evaluation, shaping and implementation. In sum, our model highlights the active roles of TMs and MMs, together, in understanding potential consumers’ inputs as key to the process of creating radical innovations.

By recognizing the roles played by TMs and MMs in developing and delivering new consumer value propositions, our work also builds on the MM innovation literature, which has shown that autonomous initiatives of middle managers often help established firms undertake radical technological change (e.g., Burgelman 1994). In this work, MMs are tasked with breaking TMs’ sustained resistance to new technological trajectories by adjusting resource allocation and thereby creating a new strategic “impetus.” MMs’ actions can be thwarted, however, by influential current customers whose purchases are relevant in the budgetary process. According to Christensen and Bower (1996), mainstream customers generally see only risks, rather than potential, in new technologies. These big customers then prevent incumbent firms from launching disruptive innovations, which instead are launched by new market entrants not constrained by these forces. In fact, TMs’ cues are said to come

from MMs, and MMs are likely to "filter" cues from the operating-level environment to suit their own agendas (Floyd and Lane 2000). Our paper complements this literature by showing how TMs' resistance can be overcome by engaging TMs with specific types of potential consumers and how the filters between TMs and MMs (Vuori and Huy 2016) can be reduced by their joint engagement with the external "voices" of key potential consumer types.

Our theory also contributes to demand-side strategy scholarship, which focuses first on value creation for consumers and only later on value capture for firms (e.g., Adner 2017; Gans and Ryall 2017; Priem and Butler 2001; Priem, Li, and Carr 2012; Priem, Butler, and Li 2013). We contribute in two ways. First, we link consumer assistance to the development of high-potential consumer value propositions (i.e., the cognitive side) *and* to the evaluation and implementation of strategies based on those value propositions (i.e., the economic side). In doing so, we show how "the consumer perspective (...) complements and extends the production-oriented perspectives—most important, by providing mechanisms to link producer strategies with consumer benefits" (Priem 2007: 232; see also Schmidt and Keil 2013). Second, our theory fits in a small stream of research that explores "creative forecasting, the skill of predicting the outcomes of new ideas" (Berg 2016: 434). We have taken a demand-side perspective in showing how consumers' assistance may aid TMs in developing and MMs in evaluating *de novo* consumer value propositions to determine *ex ante* their likely market success. This "forecasting outcomes" aspect of our theory fills a virtually empty space in the literature (Berg 2016), yet is extremely important for strategists because consumer preferences are dynamically changing and often latent (Priem *et al.* 2013: 477).

Managerial Implications

Our theory has relevant implications for TMs' agendas. Proactive innovative behavior is necessary on the part of TMs—even given their time constraints—if they are to aid their firms

in developing breakthrough value propositions. The risk of innovation-passive TMs is already well recognized. For example, “To the extent that creativity requires some amount of available time and cognitive resources, extremely high levels of job demands may squeeze out novelty and fresh thinking” (Hambrick, Finkelstein, and Mooney 2005: 504). Yet, some CEOs are already immersing themselves in proactive stances toward innovation. Before the launch of Windows 10 Microsoft’s CEO, Satya Nadella, explained his trip to Africa as one of contacting potential consumers, saying “I’m here in Kenya and in Nairobi to listen and learn” (Madowo 2015). Nike CEO Mark Parker also was proactive in his quest to discover creative talent in potential consumers. He traveled to find creative people in diverse disciplines, “just to keep my finger on the pulse of what’s going on. I think that’s important. I tend to gravitate toward people who are a bit more eccentric and creative and artistic in some ways. And I like bringing disparate kinds of creative people together to create some great work, even to share points of view on a new direction” (Lashinsky 2015). For Parker, it was crucial to find the time to be a “wacky creative, to go off and not have any regard for commercial sensibility. And I think that’s OK sometimes. You have to untie those limitations and let it fly and then see where it goes” (Greenfeld 2015). His distinctive strategy is considered to have been the main driver of Nike’s last successful and profitable years (Lashinsky 2015; Greenfeld 2015).

Another important managerial issue is how to find the potential consumer types we have identified. In the case of Nike, Parker put the company’s operating principle—“Serve the athlete”—at the center of his strategy. Nike paid thousands of the world’s greatest athletes to gain their cooperation in the design, development and marketing of new products. Moreover, Parker himself spent time with these potential consumers, flying to meetings with his athlete partners and hosting them in his office (Greenfeld 2015). He developed a “scouting” capability (Ghemawat and Nueno 2006) to find the best athletes with whom to connect. At a

more general level, trends in “Big Data” and social networks increase the availability of information on individual characteristics and behaviors (George, Haas, and Pentland 2014), and can provide useful and timely tools to help strategists searching for the creative potential consumers that best fit the needs of their firms.

Limitations and Future Research Directions

Our work is one of only a few studies that have taken steps toward integrating consumer research and strategic management (cf., Priem 2007). Much remains to be done. Because this area of study is new, our study has limitations that in themselves highlight important directions for future research. First, we set our theory in the context of established firms facing exogenous shocks because TMs and MMs in such firms face high barriers to effective change and perhaps can benefit most from interactions with potential consumers.

Nonetheless, less-established firms and even nascent startups may benefit from interactions with the consumer types described in our theoretical model, as they develop or sharpen their consumer value propositions. Further conceptual and empirical research can clarify the benefits that different types of firms may expect from interactions with potential consumers.

Second, given our focus on breakthrough creativity we limited our integrative theory discussion to the individual traits and characteristics of those consumers who are most likely to foster TM and MM creativity. This means we did not examine the other side—how the *individual* characteristics of TMs and MMs may foster or impede consumer assistance.

Therefore, future qualitative research could investigate micro-level interactions between TMs and potential consumers and MMs and potential consumers in the context of creative development, evaluation and implementation of de novo consumer value propositions. This likely would achieve a more fine-grained understanding of these interactions from both sides.

Third, for convenience we have focused throughout on consumers in B2C businesses, because

this is the most direct route for building our theory. Many B2B businesses' value propositions may benefit, however, by looking further downstream, beyond their immediate customers, to directly engage with consumers—the end users in their value systems (Adner 2017; Gans and Ryall 2017; Priem 2007). As our earlier discussion of the Nokia case shows, Nokia's TMs and MMs focused externally on direct competitors and on the company's immediate, system-operator customers such as Verizon and AT&T (Vuori and Huy 2016). Critics have argued that Nokia's lack of attention to design and to the downstream consumers' user experience likely contributed to failures in the company's mobile phone business (Eaton 2010; Orłowski 2010; Risku 2010). Including the full scope of B2B firms would have added unnecessary complications for our initial theoretical approach, but issues associated with how and in what contexts B2B firms would benefit from consumer assistance in developing de novo value propositions offer a fruitful area for future theoretical and empirical research. And fourth, we have perhaps overemphasized the use of *potential* consumers for assisting in de novo consumer value proposition development. This was intentional, because the “siren song” of current consumers is one factor that can lead TMs and MMs back to the tried-and-true rather than to the truly novel. Despite this concern, future research may identify how and when potential *and* existing consumers might be used, together with TMs and MMs, as co-producers of new ideas for value creation.

CONCLUSION

The Model T, the iPhone, Pokémon GO, Airbnb, Feastly and Uber each have disrupted markets. The managers behind these disruptive new products looked directly to consumers, at a micro-level, to develop high-potential new consumer value propositions and create successful new markets. Although Big Data has arrived, managers often don't know how to use this abundance of consumer information, or even how to ask the right questions (Cadman,

2015). It is therefore increasingly important that established firms' TM strategists and MMs understand consumer behavior—and especially the behavior of the right consumers, at the right times—at a granular level. We have made a first step toward that end by integrating a micro view of consumers with research in strategic management. It is our hope that this model will inform scholarship and encourage development of a more fine-grained understanding of the de novo consumer value proposition development process for both scholars and practitioners.

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TABLE 1.
Consumer types and traits: Definitions and supporting literature

Types of consumers	Definition	Related literature
Current	The end user of a value system (i.e., the purchaser in B2C transactions)	Christensen and Bower (1996); Priem (2007); Schmidt and Keil (2013); Priem <i>et al.</i> (2013)
Potential	An individual who may become a firm's consumer when a firm moves into a new product, service or market arena	Prandelli, Pasquini, and Verona (2016)
Lead user	A current product's user—professional or consumer—who decides to develop a new product or service to meet needs that firms have yet to anticipate, have ignored for a lack of demand, or have not yet figured out how to address. She/he is an expert in one specific domain	von Hippel (1988); von Hippel (2005); Morrison <i>et al.</i> (2000); Chatterji and Fabrizio (2012)
Influential	An individual occupying a structural hole in a social network, influencing others' behaviour and possessing a high level of domain-specific knowledge acquired through her/his network	Katona <i>et al.</i> (2011); Dane (2010); Grant (2016); Chatterji and Fabrizio (2014); Goldenberg <i>et al.</i> (2009); Weimann (1991); Burt (1997); Simonton (2000)
Imitator	An individual who is risk averse and not an opinion leader, who aligns her/his behaviors with those of a referent group.	Kristensson <i>et al.</i> (2004); Poetz and Schreier (2012); Van den Bulte and Joshi (2007); George (2007); Audia and Goncalo (2007); Fisher and Price (1992); Holt (1995); Sun <i>et al.</i> (2004); Iyengar <i>et al.</i> (2011); Aral (2011); Simonton (2000)
Traits of Consumers		
Risk taking	An individual who is willing to take risks and is thus able to come up with radically new ideas that challenge the status quo	Simonton (2000); Shalley <i>et al.</i> (2004); Dewett (2006, 2007); Eisenman (1987); George (2007); Audia and Goncalo (2007); Sternberg (2001); Kirton (1976); Zhou and George (2001); Madjar <i>et al.</i> (2011); Zhang and Arvey (2009); Dewett (2007); Amabile <i>et al.</i> (1996); Ahuja and Lampert (2001); Mainmelis (2010)
Emergent nature	An individual possessing a unique capability to imagine and envision how concepts might be further developed so that they will be successful in the mainstream marketplace	Hoffmann <i>et al.</i> (2010); McCrae (1987); Guilford (1967); Epstein <i>et al.</i> (1996); Smith and DeCoster (2000); Simonton (2000)
Non-conformist	An individual who doesn't always adhere to her/his group's norms and is thus likely to be willing and able to offer radically new ideas	Ford (1996); Holt, (1995); Hill (2015); Phillips and Zuckerman (2001); Roethlisberger and Dickson (1939); Simonton (2000); Bellezza <i>et al.</i> (2014)

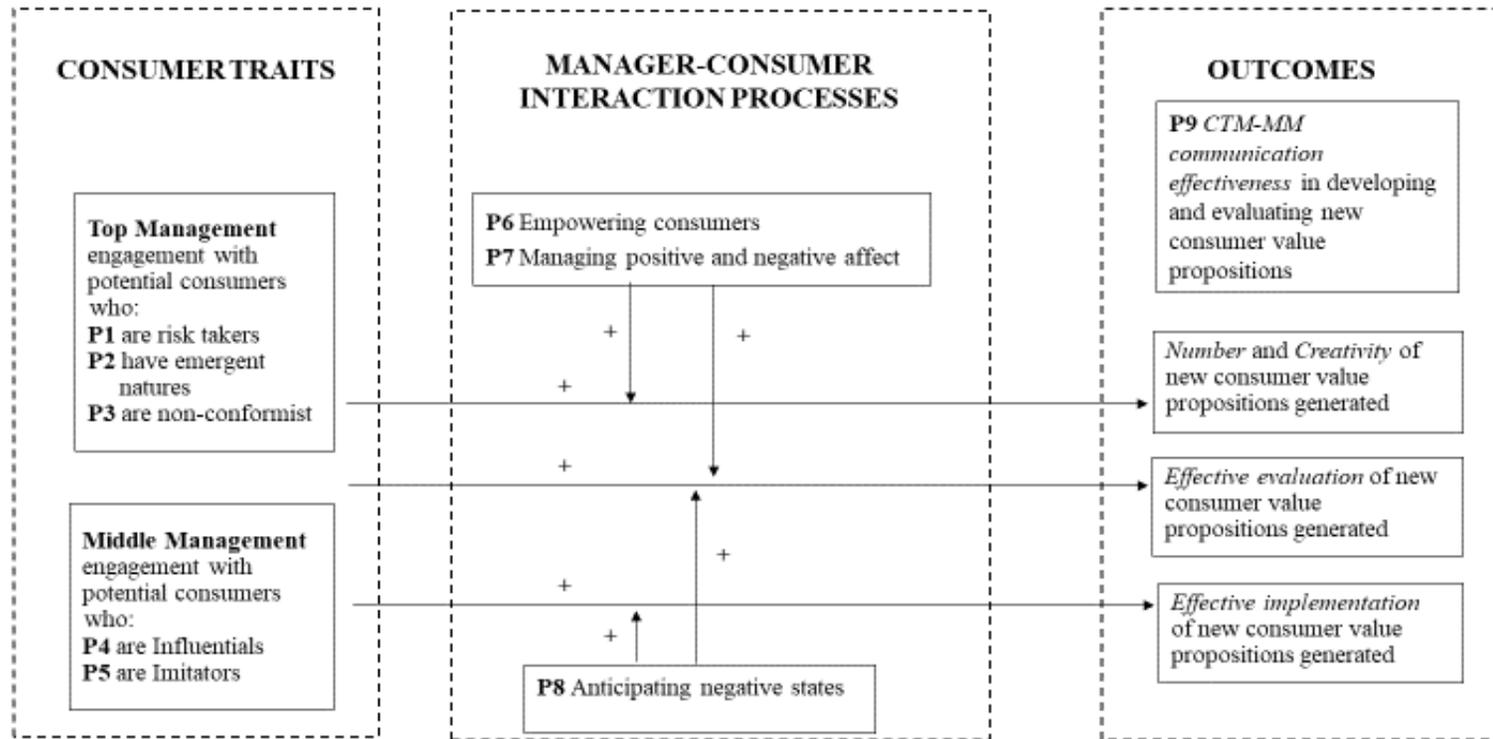
Tesi di dottorato "Three Essays On The Firm-Demand Interaction In Face Of Technological Change"
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FIGURE 1.
A trait-process-outcome model of Top Management/Middle Management interaction with potential consumers for developing and implementing new consumer value propositions.



1

2nd CHAPTER

WHERE THE HITS HAVE NO NAME: DIGITIZATION AND INCUMBENTS ADVANTAGE IN THE MUSIC INDUSTRY

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**WHERE THE HITS HAVE NO NAME:
DIGITIZATION AND INCUMBENTS ADVANTAGE IN THE MUSIC INDUSTRY**

ABSTRACT

Digitization has disrupted production and consumption logics in many industries, and oftentimes it has destroyed a complementary asset of those incumbent producers that controlled access to physical distribution. This implies different incentives for different types of incumbent producers, but the effects on competitive advantage remain unclear. We examine the impact of digitization for music record companies using a differences-in-differences design and unique data on 9,600 singles released in the United States between 2011 and 2013. We show that, with the introduction of streaming sales in the singles chart, leading companies – compared to non-leading incumbents – are less likely to enter the chart but increase their average chart position. We then show which innovation strategies digitization favors - namely, experimentation with emergent artists, exploration of niche genres and exploration pursued internally – and that leading incumbents use to sustain performance. Therefore, despite the challenges posed by digitization, our findings show that leading incumbents are not necessarily disadvantaged and that they can implement an innovation strategy that makes it possible to adapt and survive.

Keywords: *technological change, incumbents, digitization, innovation strategy*

INTRODUCTION

The increasing creation, use, and consumption of digital representation of information has affected a wide range of economic activities (Greenstein et al. 2013; Yoo et al. 2010). Oftentimes digitization has destroyed the complementary assets of market leaders, thus ending their power to control physical distribution channels and threatening their survival (e.g. Tripsas, 1997; Taylor and Helfat, 2009). Broadly speaking, it has also caused Schumpeterian destruction in many media industries (e.g. music, newspapers, video games, etc.). However, new production and search technologies have changed the quantity and variety of products available for consumption (Christensen, 1997), often to the benefit of niche products at the tail of the sales distribution (Anderson 2004; Brynjolfsson et al. 2011). Consequently, markets tend to shift from the dominance of few best-selling products towards a more diverse type of distribution and consumption (e.g. Brynjolfsson et al. 2011). However, at the same time, many digitized industries are still characterized by “winner-take-all” markets where blockbuster products dominate sales (Brynjolfsson et al. 2010). In fact, in several industries such as the creative ones, anecdotal evidence shows that leading firms have not lost the dominance and that the “superstar” effect is actually making big players even bigger, thus suggesting an ability to maintain (if not increase) the original competitive advantage with respect to non-leading firms (The Economist 2016, 2017). Indeed, although some heavy consumption users go for both hit and niche products, light users tend to converge towards best-selling ones (Elberse 2008).

In this new disruptive context, different types of incentives emerge for incumbents, and the effects of digitization on competitive advantage remain unclear (Nambisan et al. 2017; Yoo et al, 2010). Digitization in fact has reduced the cost of producing, distributing, and promoting new products, but it has also destroyed a complementary asset of leading, mainstream-positioned

incumbents – namely, access to physical distribution channel (e.g. Greenstein et al. 2013; Benner and Waldfogel 2016). The Long Tail view has thus suggested strong incentives for niche, small companies, which now find it easier to supply the demand for obscure, less-known products via digital distribution channels that before found difficult to reach the market via physical distribution (Anderson, 2004). According to this argument, non-leading incumbents should be able to exploit better the opportunities offered by digitization in terms of competitive advantage.

For leading incumbents the story is more complex. On the one hand, for firms producing hits, or more mainstream products, the lower profitability of niche products might not provide enough incentives, and digitization and Internet, by creating nationally and globally interconnected markets as opposed to local markets, might urge retailers to actually disproportionately pursue superstar products (Brynjolfsson et al. 2010). In fact, firms able to produce mainstream hits can better achieve economies of scale and command premium prices either because of increasing returns to quality or because of a highly skewed distribution of talent, which, in turn, leads to highly skewed distribution of quality (Brynjolfsson et al. 2010). On the other hand, leading incumbents might try to pursue the Long Tail strategy as well despite having lost control over the physical distribution channel. Consequently, they might try to defend their competitive advantage over smaller, niche-focused rivals by increasing their market shares. The parallel coexistence of mainstream and niche products in digitized markets, and the mixed effects on competitive advantage among incumbents, has not yet been fully addressed by studies on strategy and innovation (e.g. Nambisan et al. 2017; Yoo et al. 2010; Brynjolfsson et al. 2010). Recently Benner and Waldfogel (2016) have started to highlight the importance of shifting the focus from the incumbents versus new entrants dyad, to considering heterogeneity among incumbents in order to understand better the implications of technological change for

competitive advantage and industry dynamics. Following their argument, we point out that, (a) the relation between digitization and sales of different types of incumbents, (b) what are the firms that can take better advantage of this change and (c) which innovation strategies are more successful with this type of change, are all issues that need to be further explored by studies in the strategy field.

The recorded music industry is perhaps the most visible example of an industry impacted by digitization. The emergence of digitization and Internet, first via downloading and then streaming, opened a new distribution channel and destroyed the physical one, thus impacting a key complementary asset of leading players (i.e. the major record companies). However, it had a subsequent effect also on production capabilities. Streaming, in particular, makes scouting, launching and testing new products in the market less costly and less risky, because it favors unbundling strategies (from releasing an album every one or two years to launching just singles but more frequently). In the end, this might likely increase even more record companies' willingness to experiment (e.g. Waldfogel, 2012).

In this paper, we focus on a specific form of digitization, namely, streaming, and subsequently examine the impact of streaming on music performance in sales charts for different incumbents. The ultimate aim is twofold. First, to understand the impact of streaming in the charts for different types of incumbents, thus unveiling which type of record companies can benefit (and how) from the change. Second, to focus on innovation strategies of leading incumbents in terms of type of artists, to check whether streaming favors experimentation and exploration, and, if so, how this is exactly taking place.

The empirical context of this paper is Billboard's decision in 2012 to adjust its Hot 100 chart composition rule to include streams sales. We construct a sample with the singles that entered the

chart in the 2011-2013 time window, collecting information for every single on the record company that produced it and the artist who performed it. The sample comprises 9,600 observations on singles released by 231 record companies and performed by 322 artists.

The main empirical challenge associated with isolating the relation between streaming and sales is that there may be unobservable song-level heterogeneity and unobserved company-specific factors that are correlated with introducing streaming. Two parts of our empirical strategy help alleviate these challenges. First, we implement a difference-in-differences estimation where we compare sales performance of songs in the chart by major record companies with sales performance by independent record companies in order to identify how the performance of different types of incumbents changes after introduction of streams. We adopt a similar strategy when focusing on innovation strategies, thus analyzing sales performance in the chart at the artist level. Second, we provide anecdotal evidence suggesting that the Billboard decision was in line with market trends, and relatively unanticipated by record companies. We also performed a robustness test to check whether our results would hold in a shorter time window (just 24 weeks before and after the change rather than 48) and even with an earlier form of digitization, namely, introducing downloads in Billboard Hot 100 chart in 2005.

Our estimates highlight how introducing streams in the charts led, on average, to the entrance of 3 more independent record companies but to an increase by 4 positions for major record companies. This suggests that the change due to streaming led to more variety in the type of singles, thus benefiting indies, but to an advantage in terms of sales performance in the chart for leading incumbents rather than non-leading players. In addition, we also found that after the change, emergent artists of majors (compared to established artists) experienced, on average, an increase of almost 15 positions in the chart. This seems to suggest that streaming tends, indeed,

to favor experimentation. Interestingly, this also holds true when controlling mainstream music genres, pointing to an advantage for leading incumbents not only in terms of experimentation, but also of exploration of niches, thereby taking advantage of the long tail effect. Finally, we focused on how emergent artists were developed by the major record company. Our estimates reveal that after the introduction of streams, emergent artists developed by a label directly created by a major are more advantaged than emergent artists developed by labels that were acquired instead. This seems to suggest that streaming favors leading incumbents that have been able to internally create the capabilities needed to explore.

This study offers three main contributions. First, it disentangles the different effects of digitization on incumbents' performance inside the chart, according to the type of incumbency (e.g. Tushman and Anderson, 1986; Christensen and Bower, 1996; Ansari and Krop, 2012; Benner and Waldfogel 2016). By highlighting that heterogeneity among incumbents matters, we are able to show that leading incumbents are not necessarily disadvantaged despite the loss of a complementary asset and to reconcile the parallel coexistence of mainstream and niche products among the most sold new products. Second, we shed more light on the relation between digitization and the innovation strategies pursued by leading incumbents, by discovering that, in the end, streaming favors specific strategies related not just experimentation but also exploration. This ultimately suggests how leading incumbents can implement an innovation strategy that makes it possible to adapt and survive (e.g., Teece, Pisano and Shuen, 1997; Teece, 2007). Lastly, this study contributes to explaining the recent evolution of a crucial and important creative sector and the implications of a technological change for incumbents' strategies at the industry level.

The rest of this paper proceeds as follows. The first section provides an overview of the recorded music industry and relevant literature. The second describes the relevance of Billboard and the change of the chart computation rule. The other sections describe data, empirical approach and results. We conclude by discussing the potential contributions of this paper.

SETTING AND RELEVANT LITERATURE

Organizations operate in a world that is increasingly permeated with digital technology (Nambisan et al. 2017; Yoo et al. 2010). In fact, creative sectors such as books, music and movie industries have been deeply affected by the advent of digitization. This has taken place through two waves, namely, downloading and streaming. The music industry has been the first to experiment the dramatic effects of digital technologies (Greenstein et al. 2013).

First, creative products have high fixed costs and low marginal costs of production (Zhang 2016). The advent of digital platforms and analog/digital conversion technology has lowered the costs of copying and sharing in the music industry, thus affecting distribution and production logics. First, digitization moved music consumption from physical to digital distribution. This, combined with illegal file sharing, affected record companies' (music producers) revenues and strategies (IFPI, 2015). While the introduction of download stores opened new distribution channels but did not really change the business model of record companies, streaming, instead, affected the logic behind music production and, ultimately, record companies' business model. "With the initial move to digital, people took their physical collections and transferred them to digital, adding a few bespoke digital purchases, so a lot of product concepts remained unchanged", says Michael Nash, executive president of digital strategy, Universal Music Group. "But the move from downloading to streaming means consumers have access to millions of tracks. This means everything we are doing now around establishing artist brands, driving

preference and marketing, is different.” (IFPI, 2016: 15). Essentially, while downloading had an impact primarily on a complementary asset (i.e. distribution), streaming had a subsequent impact also in terms of development of new production capabilities, ranging from understanding and exploiting big data for new product development to managing social interactions with fans for marketing purposes. This implied also that streaming platforms brought to a different consumption behavior from the demand point of view.

Moreover, digitization has also lowered the costs of production and distribution (Greenstein et al. 2013) while new technologies have made it possible to record and produce music at lower costs. Digital distribution channels, and especially streaming platforms, have made it possible to reach global audiences in an easier and faster way.

These mixed effects of digitization make the music industry an interesting context to study the relation between digital technology and record companies' competitive advantage. In fact, the music industry also allows us to distinguish between leading and non-leading incumbents. With regard to age, tenure and survival to transitions in the industry (Chen et al. 2012), major record companies are considered the leading established incumbents of this industry (Benner and Waldfogel, 2016). Subsequently, these leading incumbents implement ambidexterity both at the organizational and market level, by pursuing exploration and exploitation strategies at the same time, both via directly created companies and acquisition of other companies (Hull, Hutchison, & Strasser, 2011).

An increasing body of literature, in both management (e.g. Bennett, Seamans, Zhu, 2015) and economics (e.g. Waldfogel, 2012a), has focused on the impact of digitization on music, by studying its effect on pricing strategies (Danaher et al. 2014) or by estimating sales displacement induced by downloading (Rob and Waldfogel, 2006). For example, Benner and Waldfogel

(2016) explore the effect of technological change on the strategic positioning of major and independent labels, finding that major labels increasingly choose artists that have been previously successful and in this way a growing share of their releases achieve commercial success. Bhattacharjee et al. (2007) found that peer-to-peer technologies do not hurt the survival of top-ranking albums but have a negative impact on low-ranking albums. Other studies deal more specifically with copyright protection and incentives in order to bring forth new products (e.g. Zahng 2016). For example, empirical evidence suggests that there was no reduction in the quality of music released after the birth of illegal file sharing (Waldfoegel, 2011; 2012a). Results also point to an increase in new album releases in the U.S. market, driven by independent labels and accompanied by a reduction in the concentration of top album sales (Waldfoegel, 2012b).

However, few of the previous studies take into account the relation between streaming and record companies' innovation strategies (e.g. Benner and Waldfoegel 2016). In addition to having different alternatives (physical vs digital, downloading vs streaming) where to find and consume music, consumers also have more options in terms of buying formats since albums are "unbundled" online (Bakos and Brynjolfsson 1999). Moreover, consumers' modes of discovering music, previously dominated by local radios, now include global streaming platforms, social sharing, and recommendation engines (e.g. Hendriks and Sorensen 2009; Dewan and Ramaprasad 2012).

Digitization has also had an impact on the distribution of products available for consumption. Online retailers can carry niche products with limited appeal since the cost of stocking an additional album on the Internet is zero and online retailers can aggregate demand by finding audiences across the globe. The Long Tail argument suggests that niche products, such as remote genres or music from lesser-known artists, can find an audience and earn similar margins

to a hit product (Anderson 2004). This effect has been documented for different creative products (e.g. Brynjolfsson et al. 2006; Brynjolfsson et al. 2011; Elberse and Oberholzer-Gee 2007). Still missing from the debate, however, is the link between digitization, firms' innovation strategies, and competitive advantage.

Moreover, during the digitization years, an increase in experimentation was observed (Goldfarb et al. 2015; Waldfogel 2012a). Not only did the number of albums released increased steadily at a global level since the early 2000s (see Figure 1) but also did the number of artists increased. In particular, IFPI reports that 4,000 artists were signed to major record companies in 2009, and 4 years later, the number almost doubled to 7,500 (IFPI 2010, 2014). Hence, although, we observe an increase in terms of quantity, from a more qualitative point of view, we do not know what kind of experimentation is taking place. Does digitization, and specifically streaming, also favor experimentation in terms of new artists? Exploration of new genres? And what type of record company is advantaged in this distribution channel by pursuing this strategy?

BILLBOARD AND THE CHART CHANGE

Given their relevance for performance (Seabrook, 2015; Trust, 2015), we decided to conduct our analyses on songs charts. In fact, in the music context, the only profitable products are those that become hits and reach the top positions in the charts - in the entire industry, ninety percent of the revenues come from just ten percent of the songs (Seabrook, 2015). Therefore, getting a song in the top 100 singles chart is a critical strategic issue. Rankings of the most popular singles are in fact self-reinforcing, leading to more consumption of the successful products on top of the chart (The Economist, 2017).

In order to understand the effect of streaming on sales performance we should have been able to observe its adoption by record companies. However, both major and independent record

companies began using streaming as a distribution channel at different times. We thus decided to exploit the Billboard's decision to include streams into the song charts as a proxy to understand the effect of streaming on music sales chart. Billboard is the leading music trade magazine in the U.S. and the Hot 100 chart, published each week, lists the most popular songs in terms of physical sales, digital sales, streams and radio airplays (Anand & Peterson, 2000; Bhattacharjee et al. 2007). In order to reflect digital changes in the market, Billboard decided to include streams (March 24, 2012¹) in the chart computation rule². We use this decision as an exogenous change for the analyses. A change in the Billboard chart rule was previously used in the literature as an exogenous shock. In their study, Anand and Peterson (2000) leveraged Billboard's change in 1991 in the methodology to compile the weekly charts to explore how organizational fields are constituted. They show that changes in scope or methodology with which market information is presented can provide a major shock to the participants' understanding of their field. Thus, understanding the effects of this change has also relevant implications for industry dynamics.

This strategy allows us to understand what happens to record companies' and artists' performance in the chart when information on sales from a new distribution channel (namely, streaming) is included. Consequently, we can thus understand the implications of digitization from the demand point of view. In music new products usually take the form of albums, composed by 10-12 songs. Although Billboard also provides a chart on album sales, we decided to focus on the singles' Hot 100 for two reasons. First, the Hot 100 is the most famous, thus capturing better music tastes from the demand point of view. Second, the Hot 100 allows us to

¹ <http://www.billboard.com/articles/news/502020/hot-100-impacted-by-new-on-demand-songs-chart>, Accessed November 25, 2015

² A first inclusion of streams in the chart rule occurred on August 11, 2007. However, in this case Billboard collected data from only two streaming services (AOL music and Yahoo! music) because these were the only services that provided data on a weekly, rather than monthly, basis. Therefore, this change explains what happened in relation to two specific music services, not to the entire market.

better understand the effects of digitization of music. In fact, digitization, and especially streaming, provides incentives for consumption of single songs rather than entire albums (Billboard Bulletin, 2015). We therefore consider that focusing the analysis on the singles Hot 100 can best serve the purpose of our paper.

EMPIRICAL STRATEGY AND IDENTIFICATION

To evaluate the effect of streaming on sales performance, we face a fundamental inference problem. For a given song, where stream sales are added, we cannot observe the counterfactual, namely the changes on sales performance if stream sales are not added. We thus develop an empirical strategy that takes advantage of several features of our institutional setting to isolate the type of impact of streams inclusion on sales performance in the chart according to the type of record company that produced the song. We exploit Billboard's decision to include streams in 2012 employing a difference-in-differences strategy, where we compare chart positions of different types of incumbent record companies, namely, majors vs indies, before and after the change in the chart. Our main estimating equation is

$$\text{DEP. VAR.}_{it} = \alpha + \beta_1 \times \text{MAJOR} + \beta_2 \times \text{CHANGE} + \beta_3 \times \text{MAJOR} \times \text{CHANGE} + \beta_4 \times \text{CONTROLS}_{it} + \varepsilon_{it} \quad (1)$$

where the dependent variables (*week position* and *peak position*) measure song performances in the chart. To test the effect of the change, we regress the dependent variable for company *i*, in week *t* on: the dummy *major*, whether the company is after the change *streaming*, and the interaction term between the major dummy and the change. The interaction term gives us the effect of the change on the leading firms (i.e. the major record companies). We run the regression at the company level. Besides using the control variables described in the "Controls" section, we use the variable *Indie new entrant* to control for new niche entrants in the years of

our time window. In this way, we are able to focus on the effect of stream on incumbents only. Robust standard errors are clustered by company to reduce the potential for overstating statistical significance as a result of serial correlation within companies (Bertrand et al. 2004).

After the first analysis, comparing major vs indie companies, we investigated the innovation strategies of majors at the artist level. We wanted to better understand which innovation strategies are more related to the songs' performance of these companies, and are thus advantaged in the streaming distribution channel. In fact, besides leveraging from a portfolio of existing products (i.e. established artists releasing new albums or singles), record companies pursue their innovation strategies by scouting and investing in new artists. We therefore decided to analyze songs' performance in terms of artistic career, by dividing artists by leading companies into *emergent* (which captures exploration strategies) versus *established* (which captures exploitation strategies). In order to decide which artist appearing in the selected time window is emergent or not, we adopted Billboard's classification: namely, an artist is considered emergent if she/he has not had a single appearing in the Top 50 Hot 100 chart nor an album in the Top 50 Billboard 200 chart before the date of interest. If one of these two requirements was not met, we classified the artist as established. In a few cases, the artist met these requirements, but had some singles or albums which entered the charts at a position lower than the Top 50. This means that their career is slightly different from an artist who had never had a single or album entering in these charts (this latter case, i.e. a pure emergent artist, represents the majority in our database). Therefore, we classified these few artists as "spurious" and added the variable *Emergent artist spurious* in the regression equation to control for careers that cannot be considered as completely "emerging" at the time of the analysis. Of the 322 artists appearing in the time window between 2011 and 2013, 104 are classified as emergent and 218 as established.

This classification, into emergent versus established artists, highlights quite neatly the difference in exploration versus exploitation strategies (e.g. O'Reilly & Tushman, 2016) pursued by leading record companies. In fact, in order to release new songs by an established artist, a major company builds on existing resources and knowledge. Instead, releasing the repertoire of a new artist means that the company is relying, at least partially, on a new type of knowledge.

However, to really capture this, we had to be sure that the artists were really developed by the current company releasing them, and not externally acquired from another company. We thus check the career of each artist appearing in the database, and track the possible change(s) of ownership of an artist among different record companies. We then build the dummy variable *Artist acquired* to control for those artists releasing under a different company than the one that initially developed them. We regress the dependent variable for artist i , in week t on: the dummy *emergent artist*, whether the artist is after the shock *streaming*, and the interaction term between the emergent artist dummy and the shock. The regression is run at the artist level, and standard errors are clustered by artist.

$$\text{DEP. VAR.}_{it} = \alpha + \beta_1 \times \text{EMERGENT-ARTIST} + \beta_2 \times \text{CHANGE} + \beta_3 \times \text{EMERGENT-ARTIST} \times \text{CHANGE} + \beta_4 \times \text{CONTROLS}_{it} + \varepsilon_{it} \quad (2)$$

As a last test, we compare the performance of emergent artists developed by a major according to the type of company that developed them. In fact, major record companies either directly create other record labels to produce artists, or acquire them. Acquisitions can be used as a way to learn and explore new, niche music genres, or acquire a roster of artists of that company in order to enlarge market share. Especially in the first case, majors use acquisitions to capture the capabilities of that record company, i.e. it is a learning mechanism (e.g. e.g. Brusoni et al., 2001). We therefore unpacked more exploration activities of major by comparing emergent

artists in terms of being developed by a company directly created by the major versus a company that was acquired. This allows us to track innovation according to the type of mode the company is using, and thus implicitly the type of capabilities it is using to innovate and develop music. We again conducted a diff-in-diff analysis for sales performance on emergent artists produced by companies directly created by a major (3).

$$\text{DEP. VAR.}_{it} = \alpha + \beta_1 \times \text{EMERGENT-ARTIST-INTERN.DEVELOP} + \beta_2 \times \text{CHANGE} + \beta_3 \times \\ \text{EMERGENT-ARTIST-INTERN.DEVELOP} \times \text{CHANGE} + \beta_4 \times \text{CONTROLS}_{it} \\ + \varepsilon_{it} \quad (3)$$

In order to interpret our coefficients as an average treatment effect, our identification strategy assumes that the timing of Billboard's change is uncorrelated with factors that determine the outcomes of interest, conditional on the baseline control. This assumption captures the fact that Billboard's decision to include streams in the chart is a decision that is not correlated with the sales of any particular song in the chart before inclusion of streams. We start by taking the identifying assumption as given and then check the validity of our assumption in the robustness section.

DATA

Data construction and sources

The primary data source for this study is Billboard Hot 100 chart that provides information on singles appearing in the top 100 sales positions in the U.S market.

Our data cover music singles sold in the 48 weeks before and after the change in Billboard's sales computation rule. Thus, our final sample consists of 9,600 observations. In this sample, we have 231 record companies and 322 artists. Every song out of the 9,600 observations in the chart

was classified according to the type of record company (also called “imprint”) that produced it³. To compile the data, we first consulted the official websites of the record companies, and then relied on other sources (such as Billboard, Wikipedia, the American Association of Independent Music, Discogs, MTV, or news websites) in order to crosscheck the information collected (type of company, foundation year, possible acquisitions, etc.). Record companies are usually classified as either major (called *majors*) or independent (called *indies*). For age, tenure and survival to transitions in the industry (Chen, Williams & Agarwal, 2012), major record companies are considered the leading established incumbents of this industry. Starting from the 1970s, their power was built by branch distribution and the ability to create or buy other music companies (Hull, Hutchison, & Strasser, 2011). Indies, instead, accomplish two functions in the industry: by exploring a diverse music repertoire that major companies neglect due to the small amount of sales generates and by providing a source of new talents and music direction for majors (Hull, Hutchison, & Strasser, 2011). They occupy a different, niche-oriented, strategic positioning from majors (Benner & Waldfogel, 2016) and are potentially better positioned to meet the demand needs when a disruption favors shifting from a mass market to micro markets where “customers demand to have it their way” (Spellman, 2006: 3). Of the 231 record companies we have in the sample, after the classification, 109 companies are classified as independent while 122 belong to a major conglomerate.

Measurement

³ A song is defined “independent” if it is independent, owned by an independent or is a partnership between/among independents. A song is defined as “major” if it is a major or owned by a major or is a partnership between/among majors. Finally, a song is defined as “partnership” if it is a partnership between/among an independent and a major (or one owned by a major). An indirect measure of the “correctness” of our classification is given by the percentage of market shares between major and independent songs. At the time of the first shock, in fact, the market share for indies was around 10% of the market, while later on (around the time of the second shock) it was around 30%. A similar division was to be found not only at the market level, but also in the Top 200 albums chart (Hull, Hutchison, Strasser, 2011). After our classification of the songs in the chart, we obtained very similar percentages in the Hot 100

Dependent variables. In order to understand the effect of the inclusion of streams in the chart, we used two dependent variables to measure songs performance: *week position* and *peak position*.

Independent variables. *Streaming* identifies the change in Billboard chart and is a dummy taking the value of 1 following the introduction of streams in the sales computation rule of the chart. *Indie*, *major* and *partnership* are dummies for the classification of songs according to the company that produced them. *Emergent artist* is a variable identifying an artist according to the type of career stage she/he is at the time of interest (and thus capturing exploration). *Internally created* is a dummy that takes on value 1 when the song was produced by a company directly created by the major, and 0 if the company that produced the song was acquired by the major.

Controls. We add a set of controls for events that might affect music sales (e.g. Hampp, 2013), such as *Christmas* (a dummy taking on value 1 in the three weeks preceding Christmas and the one following it, 0 otherwise), and the most important national music awards in the U.S. (Nielsen, 2014), which are likely to positively affect the sales of albums and songs of artists performing or winning the event⁴. Such are controls impact only some songs or artists. Yet, we control the effect of these events on all the songs/artists, since we believe they might have an impact on all the songs. These controls are: the American Music Awards (held in November), the Grammy Awards (held in February), the MTV Video Music Awards (held in late August or mid-September) and the Billboard Music Awards (held in December until 2007 and then in May since 2011). We also control also for the *age* of the company which produced the song (calculated for all the companies present in the charts except partnerships between a major and

⁴ <http://www.billboard.com/biz/articles/news/5793130/maximum-exposure-2013-grammys-bump-more-than-sales>, Accessed November 18, 2015

<http://www.billboard.com/articles/columns/chart-beat/6236464/2014-vmaw-early-sales-gains>, Accessed November 18, 2015

an indie). When performing the analysis at the artist level, we add controls for the *artist age* (calculated using the year of the release of the debut album as a proxy for the professional birth of the artist), the *artist type* (if performing the song as a solo artist, as a duo or as a group, and if featuring another artist or no), and the *artist genre* (male, female, or mixed in case of a duo or group with both male and female performers). In order to classify artists, we adopt a strategy similar to the one used for collecting information on record companies (see above) by crosschecking different sources. Table 1 provides descriptive statistics.

Insert Table 1 about here

RESULTS

In the sections below, we start by estimating the impact on streams inclusion on sales performance on different types of record companies. Consequently, we investigate which innovation strategies of leading incumbents are able to address the effect of streaming. We conclude by adding robustness tests.

Main results

The first analysis we perform is a t-test of the means to check whether there is any change in the number of songs in the chart after the inclusion of streams. In fact, previous studies suggest that digitization brought about a higher number of albums released by indies (e.g. Waldfogel 2012a). Our results (see Table 2) seem to support this finding, also in the case of singles. After the change, we observe, on average, almost 3 more independent companies and 10 less major companies in the chart. This suggests that, via the streaming channel, more independent record companies were able to break into the top most successful products.

Insert Table 2 about here

Inside the chart, this also points to an increase in music variety to the advantage of non-leading, niche players. Previous studies (e.g. Waldfogel, 2012a) suggest that this provides evidence of more experimentation at the market level, since digitization allows consumers to find and buy more niche products (either albums or singles). In other words, products that are less promising *ex ante* are not only brought to market but also appear among those generating commercial success (Goldfarb et al. 2015). As described in Figure 1, what we can observe at the industry level is that, over the years, the number of releases and artists has constantly increased. However, this increase in new products has not just involved niche companies, but also majors. In fact, artists signed to leading record companies have almost doubled from 4,000 in 2009 to 7,500 in 2013 (IFPI 2010, 2014).

Insert Figure 1 about here

Therefore, if this first result supports what the Long Tail view predicted, will we observe this advantage in the chart for niche players related to streaming also in terms of performance? In other words, besides entering the top 100, do these singles and companies also perform better after the change? The anecdotal evidence still highlights the presence of hits, or superstar products, released by leading, mainstream players. For a product to be a blockbuster, it means that in terms of sales performance we should be able to observe an advantage more for majors rather than indies. We plotted the average week position in the chart for majors and indies in our time window (see Figure 2). The average chart position was aggregated at the month level. The plot shows that, before the Billboard change, over time, the chart position for majors tends to stay quite the same if not decreasing, while for indies it is increasing. After the change, however, this trend reverses: we now observe a decrease in the average chart position for indies while it increases for majors.

Insert Figure 2 about here

After introducing streams, the plot in Figure 2 seems to suggest that record companies' performance in the chart was influenced quite differently according to the type of company. In particular, there seems to be an advantage for majors. We thus decided to check this by analyzing sales performance for majors (versus indies) via the diff-in-diff design. For the d.v. *week position* (Table 3, column 1), the interaction term has a negative⁵ and significant coefficient ($b = -4.121$, $p < 0.05$), thus suggesting that, on average, the introduction of streams led to an increase by 4 positions in the chart for major companies. The interaction coefficient is also negative and significant for the *peak position* ($b = -2.871$, $p < 0.1$) in column 2, thus showing, in this case, that the introduction of streams increased the performance in the chart for major companies.

Insert Table 3 about here

Overall, these initial findings seem to suggest that digitization led to an advantage for major companies, the leading incumbents, in terms of sales performance in the chart compared to the non-leading, niche-focused, players: their hits that made the Top 100 chart did, on average, succeed more after the change. We can say that streaming brings different, opposite, effects for the different types of incumbents, and these effects vary according to which type of sales measure is used. These findings can thus provide a first explanation to the product dynamics that we observe in music consumption, but also in other creative sectors: namely, that niches coexist with best-selling products. Therefore, our next step is to focus on the strategies related to innovation that leading incumbents could use.

⁵ The coefficient for the d.v. *week position* and *peak position* have to be interpreted in the opposite way with respect to the sign of the coefficient.

First, we compare the performance of artists of majors, namely, emergent versus established. We again plotted the average chart position (aggregated at the month level) in order to understand if there might be any type of change after the inclusion of streams. As Figure 3 shows, the pre-trend is constant for established artists, and it keeps the same after streams introduction. Instead, for emergent artists, there is a steady increase in the average chart position after streaming.

Insert Figure 3 about here

The diff-in-diff analysis confirms that the performance of emergent artists of a leading company is positively and strongly affected by the introduction of streams compared to established artists (see Table 4). In particular, an emergent artist sees her/his week position in the chart increasing by 14.7 positions on average ($p < 0.05$), also reaching a peak position much higher than before the shock ($b = -21.532$, $p < 0.01$). This seems to suggest that streaming is beneficial to major companies investing in exploration, namely, new product development by scouting new artists.

Insert Table 4 about here

Following-up this finding, we wanted to test whether the results for emergent versus established artists hold true even when controlling for the music genre the artist is positioned into. Leading record companies are usually positioned into mainstream music genres, but also explore niche segments. In fact, besides requiring specific economic investments, music genres signal a specific and distinct market identity (Montauti & Wezel, 2016). Therefore, in the case of new artists positioned in niche genres, distant from the ones usually presided by majors, we can measure a type of exploration higher than the one pursued via new artists in mainstream genres.

We thus replicated the regression analysis (2) controlling also for the type of music genre an artist is positioned into through the dummy variable *Mainstream*. The classification of genres (mainstream versus niche) was done according to the classification, algorithmically-generated, done by Glenn McDonald⁶. The results of the diff-in-diff analysis (see Table 5) remains qualitatively the same as those of the previous analysis, suggesting an advantage of emergent artists positioned in niche genres compared to those with a more mainstream position.

Insert Table 5 about here

As a last step, we investigate how the majors exactly developed these new artists, whether through a created label or an acquired one. In fact, evidence suggests that sometime firms can decide to keep their internal knowledge base wide despite outsourcing some capabilities (Brusoni et al., 2001). This knowledge in excess allows them to cope with possible imbalances in technology developments (e.g. Brusoni et al., 2001). The change in the chart rule (see Table 6) has a negative and significant coefficient for the week position ($b=-11.012$, $p<0.05$) and the peak position ($b=-11.277$, $p<0.05$), implying that an emergent artist launched by a company directly created by the major increases her/his average week and peak position by 11 positions. This implies that it was not the emergent artist developed through the competencies of an acquired company to be favored in the streaming channel.

Insert Table 6 about here

^{6 6} <http://everynoise.com/retromatic.html>

Tesi di dottorato "Three Essays On The Firm-Demand Interaction In Face Of Technological Change"
 di ZANELLA PAOLA

discussa presso Università Commerciale Luigi Bocconi-Milano nell'anno 2018

La tesi è tutelata dalla normativa sul diritto d'autore (Legge 22 aprile 1941, n.633 e successive integrazioni e modifiche).

Sono comunque fatti salvi i diritti dell'università Commerciale Luigi Bocconi di riproduzione per scopi di ricerca e didattici, con citazione della fonte.

Robustness tests

We corroborate our findings with a series of both quantitative and anecdotal evidence. First, we decided to check our last result, i.e. if also internally developed established artists (exploitation) take more advantage by streaming compared to those developed by acquired companies. We thus performed a diff-in-diff analysis (see Table 7). Indeed, the shock has a negative and significant coefficient for the week position ($b=-4.774$, $p<0.01$) and the peak position ($b=-3.152$, $p<0.05$), implying that an established artist launched by a company directly created was better able to face digitization compared to one developed by an acquired company. Even if a leading company performs worse after streaming through exploitation, this seems to highlight that the internal mode for innovation is still better than the external mode. This suggests that it might be better to pursue exploration and exploitation within the same mode, when dealing with streaming, rather than across different modes.

Insert Table 7 about here

Subsequently, in unreported regressions, we perform two robustness checks in order to remove the existence of possible cofounding factors affecting our results. First, we replicate our main analyses in a shorter time window and select 24⁷ weeks before and after the change. Since we almost use one year before and after the change, one concern could be that factors we cannot control for, other than the Billboard rule change, might affect singles in the chart. We then test whether our results would hold in a time window previous to the 2011-2013 one. Digitization in fact, as previously mentioned, started to appear in the music industry through downloading.

⁷ We chose a 6-month window in order to address the possible stagnation of streamed singles in the chart, but also to avoid cutting the time frame too early. In fact, especially songs by new, emergent artists, tend to take more time to reach the peak position in the chart compared to singles by established artists. In this way, we are not cutting too early on the time window. <https://blog.nextbigsound.com/streaming-charts-pandora-50b87783a6ab>

Billboard introduced downloads into the Hot 100 chart in 2005. This case allows us to capture an early form of digitization, even if not with the same profound implications for the industry players (in fact, while affecting physical retailers, digital retailers did not affect the business model of record companies, thus not resulting as disruptive as streaming would be later on). We thus conduct the same analyses in a different time window (2004-2006) again using Billboard's decision as an external change. After conducting the same type of classification as the one conducted for streaming, in this case, the final sample consists of 133 record companies and 374 artists. In both cases (shorter time window and different time window), our results are qualitatively unchanged.

Another possible concern is that our results might still be partially affected by other factors than the ones we control in the analyses. That is to say, that a change in the investments related to A&R and marketing might affect the performance of some record companies or artists. Especially for majors, the ability to support their product portfolio with important amounts of resources for scouting, developing and promoting music might be used to explain our results. Indeed, at the company level, investment data on these activities are difficult to find for single companies and often not available. We thus cannot control them in the analyses. However, we do provide other evidence that we think helps in supporting our results. First, the data suggest that, at the industry level, investment in A&R did not experience a decrease in the years of interest, and record companies actually sustained their investment in artists despite the significant fall-off in overall sales revenue (IFPI 2010, 2012, 2014). In fact, the share of record company revenues (16%) invested in A&R kept constant before and during the years of our analysis (2009-2013). Instead, the share of revenues devoted to marketing and promotion activities fluctuated and experienced a decrease from 2009 to 2011 (from 13% to 10%). Interestingly, this happened

while both the costs for A&R and marketing and advertisement for a major new signing tended to grow. Provided that majors tend to invest more heavily on marketing and promotion, this seems to suggest that our results should not be driven by a change in the quantity of resources devoted to promotion. Table 8 provides an overview of the evolution of investment and costs.

Insert Table 8 about here

The change we use for the analysis, namely Billboard's decision to include streams in the chart's sales computation rule, seems to be consistent with what happened at the market level, around the same time. Value data⁸ for streams in the U.S. market for the time window between 2010 and 2014 in Figure 4, shows, in fact, that around the time of our shock (i.e. 2012) streams (both as subscriptions and as ad-supported) experienced a sudden increase in the general trend of growth relative to this sales channel. This would suggest that Billboard was able to capture the change (and include it in its charts) at the same time it was happening in the market. This seems to suggest that the chart rule change can be interpreted as uncorrelated with factors that determine the outcome of interest, namely, the sales of any particular song of majors or indies.

Insert Figure 4 about here

Interestingly, around the same time in 2012, downloads were experiencing a change similar to streams as showed in Figure 4, though in the opposite direction. Figure 5 shows that downloads for single tracks and albums started experiencing a decrease in the year of our shock. It seems that the market began to move away from downloading towards streaming right in 2012. We thus interpret this information from aggregated sales data as additional evidence of the robustness of

⁸ Value data on streams and downloads were obtained from the IFPI (International Federation of the Phonographic Industry) RIN annual report on music industry sales and revenues (2015).

the shock we employed in the empirical analysis.

Insert Figure 5 about here

In conclusion, the findings from the main analyses on streaming are also consistent with what happened to major companies in the years following our time window. Digital revenue for major record companies has grown from around 40% to more than half of all revenue since 2014, but stalled for a while and even declined, as streaming services began to really take off (Dawson, 2016). In fact, in this industry, streaming became the main driver of consumer music consumption in 2015 (Christman, 2015), displacing digital downloads as the largest source of revenue in the music industry's biggest market, the US (Bond, 2016). This trend can be observed regarding the three major record companies (Shaw, 2016). For example, it took Universal Music up until 2013 for digital sales to overtake CD sales for the first time (Adegoke, 2014) and only in 2016 did streaming growth offset the decline in both digital download and physical sales (Flanagan, 2016). In 2015, streaming became the main source of revenue for Warner Music (Peoples, 2016; Bond, 2015). Therefore, our findings can be considered, at least partially, as predictors of what would later also happen at the industry-level, namely, that the overall effect of streaming on industry revenue is positive (Wlomert & Papies, 2016).

CONCLUSIONS AND IMPLICATIONS

This study provides an overview of the effects of streaming on record companies' performance in music. It thus offers three main contributions. First, by focusing on incumbents' performance and strategies regarding digitization, we are able to reconcile the parallel coexistence of hits and niche products among the most sold new products and start explaining how this happens. In fact, we disentangled the different ways through which digitization favors incumbents' performance in the chart, according to the type of incumbency. According to traditional theories of

technological change, generally, established firms, and leading incumbents in particular, encounter many problems in adapting to the new technological base (Tushman & Anderson, 1986; Anderson & Tushman, 1990). In fact, firms are characterized by inertial forces that can take different forms, including the following: a lack of the new competence base to develop innovations (Abernathy & Utterback, 1978; Tushman & Anderson, 1986); the inability to integrate new forms of knowledge required by the technological change within the organization (Henderson & Clark, 1990; Henderson & Cockburn, 1994); a limited understanding of the nature and trajectories of the technological shock (Tripsas & Gavetti, 2000), including a narrow understanding of new customers (Christensen & Bower, 1996; Danneels, 2010); and a lack of complementary assets to finalize the innovations required by the new technological competence base (Tripsas, 1997; Taylor & Helfat, 2009). For all these reasons, established firms face hurdles in tackling technological change and can lose market leadership (Ansari & Krop, 2012). Other evidence, however, suggests that leading incumbents might have the ability to adapt and sustain performance in the face of technological change. Chandy and Tellis (2000) were among the first to point out that the renowned incumbent's inability in the face of radical innovations may have been overstated. Scholars have suggested several factors, such as previous experience (Klepper and Simons 2000), the ability to control platform ecosystems (Gawer & Cusumano, 2008), the balance and integration of investment, technical capabilities, and specialized complementary assets (Tripsas 1997), or the access to the new required capabilities (Sosa 2011). However, most of this research has focused on the survival prospects of incumbents vis-à-vis new entrants, and still little is known about how and why certain incumbent firms might be able to resist this fate thus showing staying power (Ansari & Krop, 2012). And this is especially relevant for the frequency with which organization are facing digital technology in industries (Yoo et al. 2010).

We think our findings on leading and non-leading incumbents can thus add an important insight to this conversation by uncovering which firms, and how, are advantaged in the streaming distribution channel.

Second, we shed light on the relation of digitization to the innovation strategies pursued by leading incumbents, by discovering that, in the end, streaming favors not just experimentation but also exploration. We thus contribute to literature on renewal and dynamic capabilities (e.g., Teece, Pisano & Shuen, 1997; Teece, 2007) by highlighting how leading incumbents can continue producing innovations consistent with the new ecosystem after the digital change. In our study, we show how it is possible to reconcile the fact that leading incumbents do not lose the leadership and maintain it by pursuing the ability to radically innovate and explore new, distant segments through exploration activities (e.g. O'Reilly & Tushman, 2016). Therefore, our findings on the importance of not just experimentation, but also exploration, and in particular on which mode of exploration is more beneficial to face digital change, can also enrich the discussion on what type of innovation activities are better for company performance, and how firms should balance them according to the goal they want to achieve (e.g. Stettner & Lavie, 2014).

Lastly, this study also helps to better explain the recent evolution of a crucial and important creative sector and understand the implications of a technological change on incumbents' strategies at the industry level. Thus, this can have important implications for other creative sectors (such as books, movies or video game industries) that are experiencing the changes brought by digitization.

Limitations and future research implications

Our study presents some limitations that mostly pertain to the type of empirical context and data we used. One first important limitation of our study relates to the type of change used in the empirical strategy. In fact, the change is not related to the actual adoption of the new distribution channel by the firms involved in the study, but just captures the inclusion of the sales data from this channel into the sales ranking. Thus, what it really captures is the inclusion of sales information. We cannot draw conclusions on the effects of digitization on sales outside the charts' context.

The second limitation comes from the type of sales data we use. Top sales charts, in fact, stop at the first 100 songs that sell the most. They do not allow us to observe what happens from position 101 below. While being the most relevant for record companies, this means that the sales performance we capture is not complete.

Another limitation pertains to the type of technological change that we study. In fact, in the first place, this change did have a direct effect on distribution and, subsequently also influenced production. This implies that our findings should be interpreted according to this specific boundary condition, namely, a type of technological change that first destroys an existing complementary asset and then changes production capabilities. Future studies might try to test our hypotheses with a technological change with a more direct effect on production. Lastly, our empirical context analyzes a creative industry – future research can try to replicate our findings in a different industry influenced by digitization.

Another opportunity for future research derives from the fact that we did not focus on the third way through which firms can innovate, namely, partnerships and alliances between different types of incumbents or between incumbents and new entrants. Future studies can

explore this mode in order to understand if and how this strategy can be used in order to survive a disruptive change.

In conclusion, our results suggest how, in the case of a technological change that implies a change in demand behavior, leading firms can sustain their performance. When considered together with the demand side, this seems to suggest that the effect of a technological change on suppliers is more complex than what previous literature shows. Contrary to what is predicted by theories of disruption and competence destroying change, these findings, in fact, highlight that leading incumbents are not always disadvantaged compared to new competitors or small, non-leading firms focused on niche markets when a technological change happens. In particular, we define the potential mechanisms through which leading incumbents can achieve this, thus contributing not only to the literature on discontinuities and disruptive change, but also to studies on innovation and exploration.

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Table 1. Summary statistics – tot. observations 9,600

Variable	Mean	Std. Dev.	Min	Max
Indie	0.274	0.446	0	1
Major	0.597	0.490	0	1
Partnership	0.128	0.335	0	1
Week position	50.5	28.867	1	100
Peak position	39.130	29.896	1	100
Streaming	0.5	0.500	0	1
Christmas	0.083	0.276	0	1
American Music Awards	0.042	0.199	0	1
Grammy Awards	0.031	0.174	0	1
MTV Awards	0.042	0.199	0	1
Billboard Awards	0.042	0.199	0	1
Company age	25.680	28.791	0	126
Distribution label (major ownership)	0.606	0.488	0	1
Emergent artist	0.309	0.462	0	1
Emergent artist spurious	0.043	0.203	0	1
Artist age	6.165	5.433	0	59
Artist type	2.296	1.695	1	6
Artist genre	1.383	0.623	1	3
Mainstream genre	0.247	0.431	0	1
Artist acquired outside	0.556	0.497	0	1

Table 2. T-test of the means for companies

	Mean before	Std. Dev.	Mean after	Std. Dev.	Difference before-after
Indie companies	24.501	61.746	27.294	63.729	-2.793**
Major companies	52.593	81.248	42.196	70.971	10.397***

***p<0.01; **p<0.05; *p<0.1

Table 3. Regression for *majors* (vs established indies)

Dependent variable	Week Position (1)	Peak Position (2)
Major	1.698 (1.955)	1.277 (2.280)
Streaming	1.135 (1.304)	1.508 (1.389)
Major x Streaming	-4.121** (1.617)	-2.871* (1.671)
Constant	59.258*** (1.106)	47.995*** (1.195)
Observations	5,398	5,398
R²	0.004	0.007
Controls	yes	yes

Note: random effects model; standard errors clustered at the company level

***p<0.01; **p<0.05; *p<0.1

Table 4. Regression for *emergent artists of majors* (vs established artists of majors)

Dependent variable	Week Position (1)	Peak Position (2)
Emergent Artist	27.933*** (4.496)	37.734*** (4.624)
Streaming	-0.528 (0.904)	1.221 (0.908)
Emergent Artist x Streaming	-14.715** (5.764)	-21.532*** (5.808)
Constant	49.164*** (1.657)	36.720*** (1.701)
Observations	5,296	5,296
R²	0.053	0.047
Controls	yes	yes

Note: random effects model; standard errors clustered at the artist level

***p<0.01; **p<0.05; *p<0.1

Table 5. Regression for *emergent artists* of majors (vs established artists of majors) controlling for type (i.e. mainstream) of music genre

Dependent variable	Week Position (1)	Peak Position (2)
Emergent Artist	26.225*** (4.355)	35.359*** (4.536)
Streaming	-1.543* (0.899)	-0.324 (0.892)
Emergent Artist x Streaming	-13.344*** (5.540)	-19.517*** (5.688)
Constant	51.238*** (1.656)	40.031*** (1.687)
Observations	5,296	5,296
R²	0.073	0.094
Controls	yes	yes

Note: random effects model; standard errors clustered at the artist level

***p<0.01; **p<0.05; *p<0.1

**Table 6. Regression for *emergent artists of companies directly created by majors*
(vs emergent artists of companies acquired by majors)**

Dependent variable	Week Position (1)	Peak Position (2)
Emergent Artist	1.530 (5.074)	-0.880 (5.567)
Streaming	-8.822*** (3.331)	-14.137*** (3.381)
Emergent Artist x Streaming	-11.012** (4.435)	-11.277** (4.441)
Constant	85.833*** (8.030)	95.115*** (9.196)
Observations	1,293	1,293
R²	0.148	0.106
Controls	yes	yes

Note: random effects model; standard errors clustered at the artist level

***p<0.01; **p<0.05; *p<0.1

Table 7. Regression for *established artists of companies directly created by majors* (vs established artists of companies acquired by majors)

Dependent variable	Week Position (1)	Peak Position (2)
Established Artist	2.287 (2.555)	-6.379*** (2.437)
Streaming	3.118** (1.290)	1.260 (1.157)
Established Artist x Streaming	-4.774*** (1.766)	-3.152** (1.570)
Constant	62.735*** (6.349)	61.728*** (7.155)
Observations	4,003	4,003
R²	0.048	0.021
Controls	yes	yes

Note: random effects model; standard errors clustered at the artist level

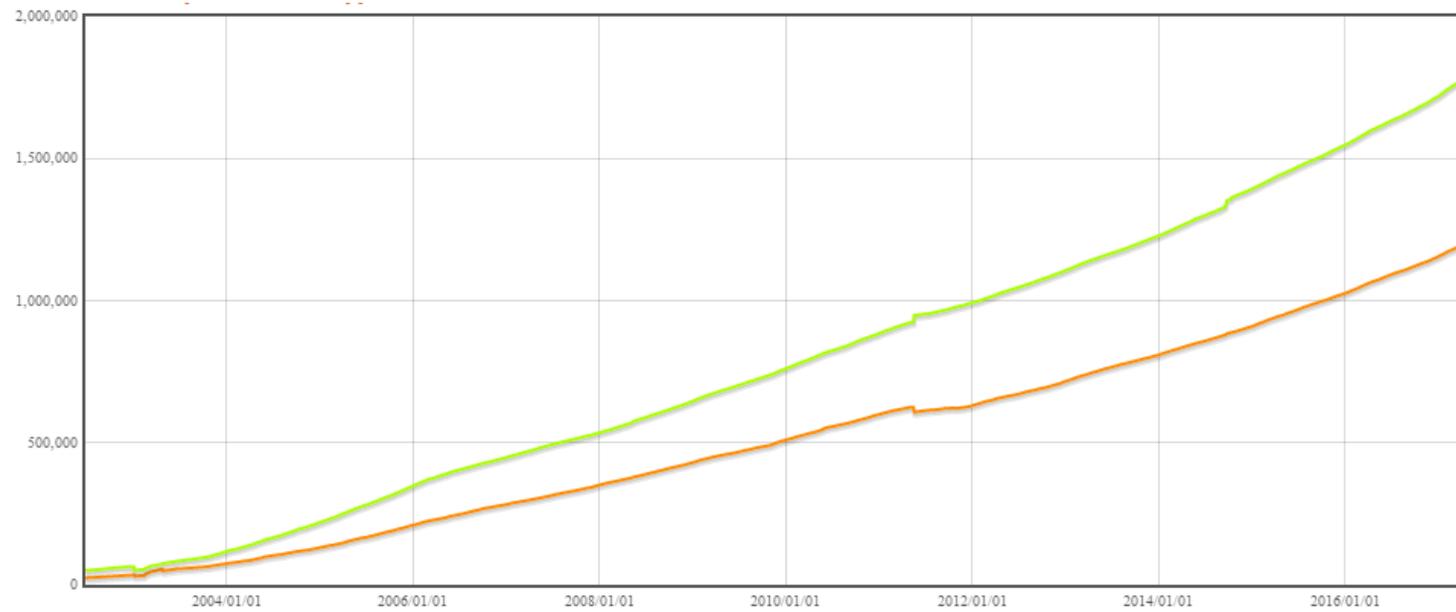
***p<0.01; **p<0.05; *p<0.1

Table 8. Investment and costs in A&R and promotion (marketing and advertisement)

Year	Global investment in A&R and mktg	Share of record company revenues invested in A&R and mktg	A&R investment	Share of record company revenues invested in A&R	Mktg investment	Share of record company revenues invested in mktg	Typical mktg and advertisement cost for a major new signing	Total costs of breaking an act in a major market
2009	US\$ 5 billion	29%	US\$ 2.7 billion	16%	US\$ 2.3 billion	13%	US\$ 200,000 – 300,000	US\$ 500,000 – 1 million
2011	US\$ 4.5 billion	26%	US\$ 2.7 billion	16%	US\$ 1.8 billion	10%	US\$ 200,000 – 500,000	US\$ 500,000 – 1 million
2013	US\$ 4.3 billion	27%	US\$ 2.5 billion	16,0%	US\$ 1.8 billion	11,0%	US\$ 200,000 – 700,000	US\$ 500,000 – 2 million

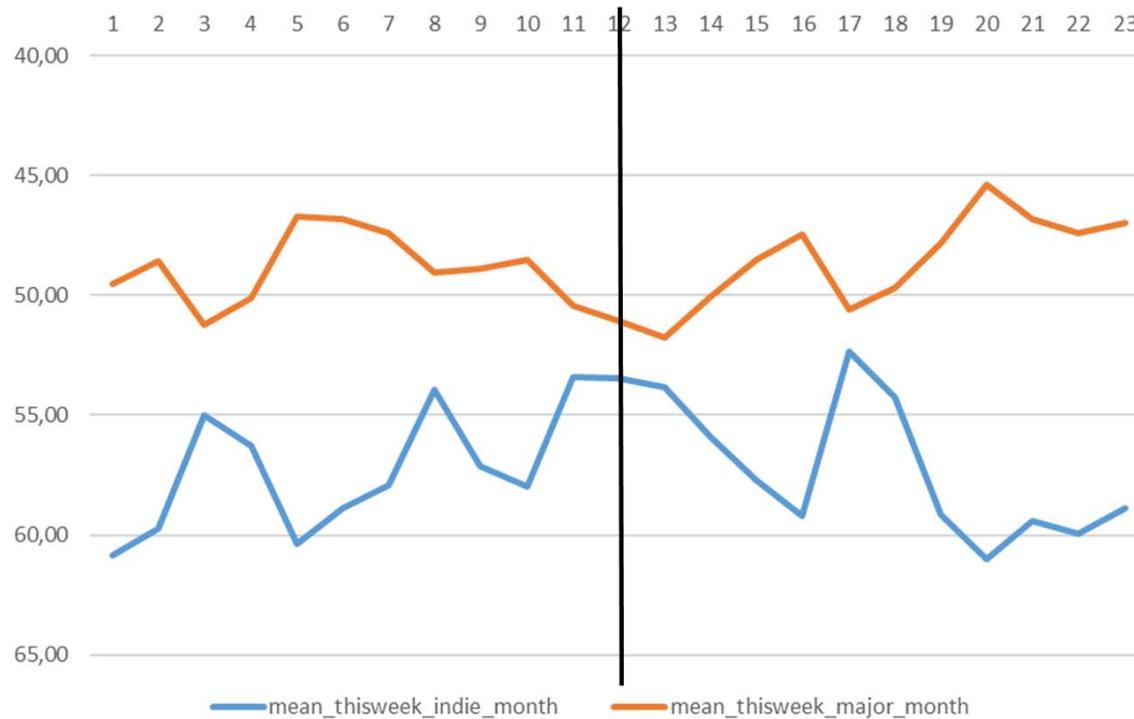
Note: IFPI report on “Investing in Music” is published every two years. Data are therefore missing for 2010 and 2012.

Figure 1. Global number of releases (green line) and artists (orange line)



Source: <https://musicbrainz.org/>

Figure 2. Average chart position (aggregated at the month level) for majors (orange line) and indies (blue line)



Note: Billboard's change occurred in March 2012, so month number 12 in the graph

Figure 3. Average chart position (aggregated at the month level) for established artists (orange line) and emergent artists (blue line) developed by majors

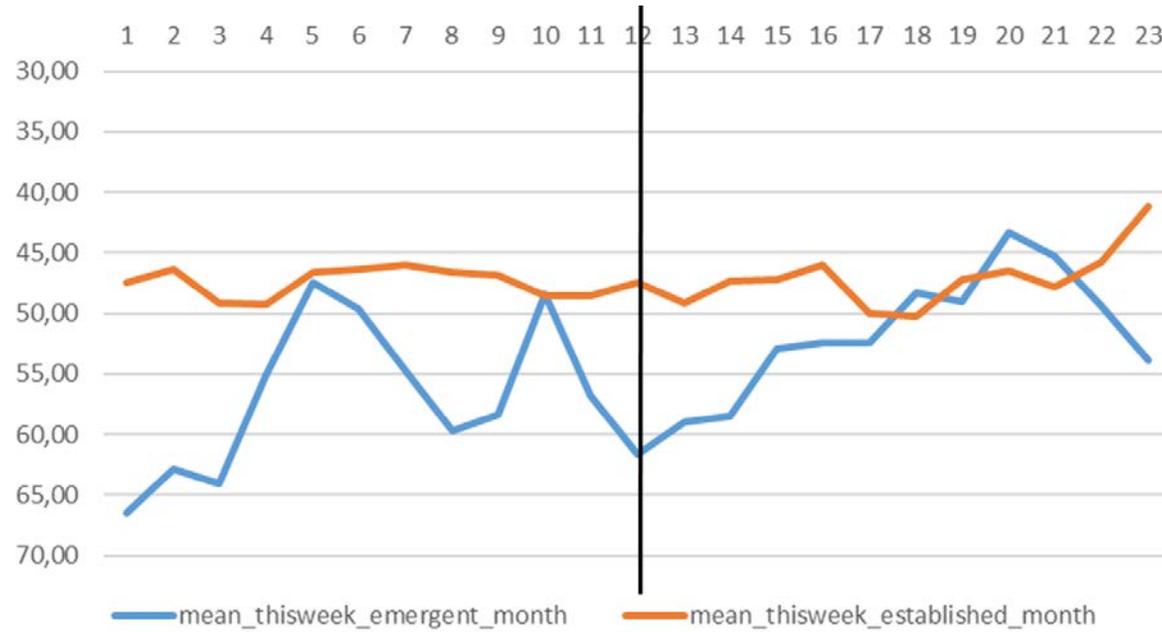


Figure 4. Value data (in dollars) on streams' sales in the U.S. market (2010-2014)

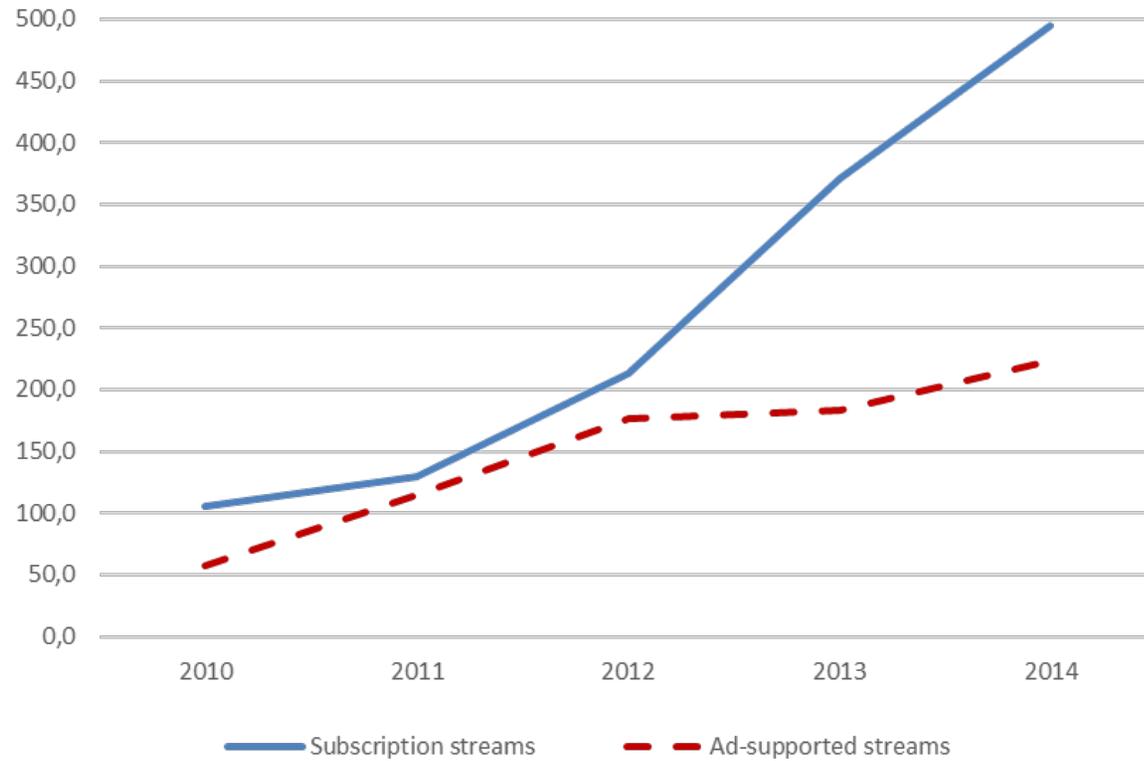
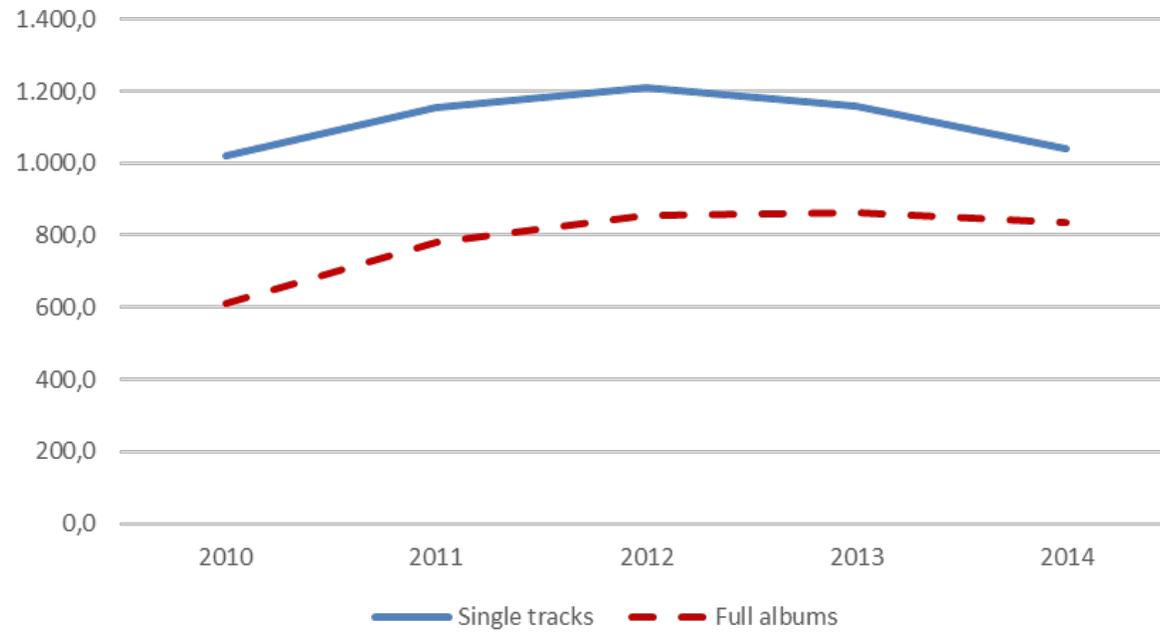


Figure 5. Value data (in dollars) on downloads' sales in the U.S. market (2010-2014)



3rd CHAPTER**DIGITIZATION AND MOBILITY OF CREATIVE RESOURCES IN THE MUSIC INDUSTRY****Paola Zanella**

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DIGITIZATION AND MOBILITY OF CREATIVE RESOURCES IN THE MUSIC INDUSTRY

ABSTRACT

Digitization has disrupted production and consumption logics, and in many industries oftentimes it has destroyed a complementary asset of those incumbent producers that controlled access to physical distribution. The implications of such type of change for the mobility and performance of creative resources of these firms, however, are still unexplored. We examine the impact of digitization for artists in music using a differences-in-differences design and unique data on 9,600 singles released in the United States between 2011 and 2013. We show that, with the introduction of streaming sales in the singles chart, artists who moved in their career – compared to those who never moved – increase their average chart position. We then focus on the type of mobility and show that digitization does not favor internal mobility compared to the external one. Therefore, our findings show that a technological change can have implications for firms' resources and their mobility also at a micro, individual level.

Keywords: *technological change, mobility, digitization*

INTRODUCTION

Digitization has lowered the costs of production and distribution in several industries (Greenstein et al. 2013). At the same time, however, digitization has also destroyed a complementary asset of some leading, mainstream-positioned incumbent producers that controlled access to the physical distribution channel (e.g. Greenstein et al. 2013; Benner and Waldfoegel 2016). Through the new distribution channel, reaching segments of the market other than the mainstream one would become less costly and easier (Anderson, 2004; Brynjolfsson et al. 2010). We do not know, however, if such technological change affecting a complementary asset of producers might have implications also for the mobility and performance of creative resources of producers.

Research on employee mobility has highlighted the strategic importance of the movement of human capital across firm boundaries. Employee mobility affects important organizational outcomes (e.g., Rao and Drazin, 2002; Song, Almeida, and Wu, 2003; Rosenkopf and Almeida, 2003; Singh and Agrawal, 2011; Agarwal, Echambadi, Franco, and Sarkar, 2004), and the value of human assets increases with the knowledge intensity of an industry (Coff, 1997; Lippman and Rumelt, 1982). Prior learning and existing paradigms however may also cause learning myopia and constrain the direction of search (Allen and Marquis 1964, Ward 1995), so exposure to social, cognitive, and physical diversity can help in breaking a person's constrained perspectives (Simonton 1999). Moreover, the longer relationships that internal mobility fosters lead to unique organizational capabilities, as workers develop firm-specific skills and human capital (Chadwick and Dabu, 2009; Huckman and Pisano 2006). Therefore, while these types of investments can become a key strategic tool to create and sustain competitive advantage (e.g. Raffiee and Coff 2016), once employees move their specific knowledge might be no longer useful, leading to a performance decline (Coff and Raffiee 2015). Digitization, by making less costly and easier to reach segments of the market other than the mainstream (Anderson, 2004; Brynjolfsson et al.

2010), might favor mobility and make firm-specific investments on the single resource less relevant from the market viewpoint, thus not favoring those who moved internally during their career.

In this paper, we focus on a specific form of digitization, namely streaming, in a knowledge-based industry, i.e. music. We then examine the impact of streaming on music in sales charts for different artists. The ultimate aim is twofold. First, to understand the impact of streaming in the charts for different types of artists, thus unveiling if mobility is advantaged or not. Second, to focus on different types of mobility (internal versus external) to test which type streaming favors.

The empirical context of this paper is Billboard's decision in 2012 to adjust its Hot 100 chart composition rule to include streams sales. We construct a sample with the singles that entered the chart in the 2011-2013 time window, collecting information for every single on the record company that produced it and the artist who performed it. The sample comprises 9,600 observations on singles by 322 artists produced by 231 record companies. Our estimates highlight how introducing streams in the charts led, on average, to the increase by 3 positions for artists who moved in their career (compared to those who never moved), but to a decrease by 13 positions for those who moved internally. This seems to suggest that a technological change affecting complementary assets such as digitization might lead, at the individual level, to an advantage for those individuals who moved across different companies but to a disadvantaged for those who kept moving inside the same organizational boundaries and who tend to build more firm-specific knowledge and capital.

THEORY AND HYPOTHESES

Mobility, digital change and performance

Strategic human capital research on employee mobility has highlighted the importance of the movement of human capital across firm boundaries. Employee mobility can facilitate the ability of an organization to transfer resources (Rao and Drazin, 2002) and it affects important organizational outcomes, such as innovation (e.g., Rao and Drazin, 2002; Song, Almeida, and Wu, 2003), learning (e.g., Rosenkopf and Almeida, 2003; Singh and Agrawal, 2011), or capability acquisition and divestiture (e.g., Agarwal, Echambadi, Franco, and Sarkar, 2004). And many industries are increasingly characterized by boundaryless careers (Bidwell and Briscoe, 2010), where individuals regularly change employers.

Human assets have been recognized as an integral part of value creation, and their value increases with the knowledge intensity of an industry (Coff, 1997; Lippman and Rumelt, 1982). This means that employee mobility might cause firms to lose their competitive advantage and to enable their competition, given the transfer of the human assets to either established competitors or to spinouts (Campbell, et al 2012). The development of social ties in organizations however may help tie key knowledge workers to the firm (Capelli, 2000). Interestingly, in their study on global fashion industry, Shipilov, Godart and Clement (2016) found that key employees' moves to foreign competitors may increase their former employers' creative performance, but that firms may suffer from losing key employees to higher- or same-status competitors. And while employee mobility can help firms overcome resource constraints and capability deficits (Rao & Drazin, 2002), it was found that star artists, such as Oscar winners, are free agents who can quickly adjust their fees to reflect their market value, thus capturing most of their expected value added (Ravid 1999). According to Groysberg, Lee and Nanda (2008), hiring stars is advantageous neither to stars themselves, in terms of their performance, nor to hiring companies

in terms of their market value. The only cases when mobile analysts can preserve their performance is when they move to a firm with better capabilities and when they take firm-specific human capital with them in the form of existing colleague relationships (Groysberg, Lee and Nanda 2008).

Besides the effects of mobility on firm performance, studies on employee mobility have also addressed individual performance. Prior occupational experience has a positive effect on performance via knowledge and skill but a negative direct effect which is driven by behavioral and cognitive rigidities (Dokko, Wilk, and Rothbard 2009). While prior learning and existing paradigms in a field help a person to interpret information and guide inventive search, they may also cause learning myopia and constrain the direction of search (Allen and Marquis 1964, Ward 1995). It has been argued that instead exposure to social, cognitive, and physical diversity provides the raw material for recombinant novelty and helps to break a person's constrained perspectives (Simonton 1999). Arts and Fleming (2016), for example, find that inventors who do not change fields invent more valuable patents, as measured by renewal and citation; inventors who instead change fields invent more novel patents, as measured by new words and fewer citations to prior art. To conclude, mobility can affect also the performance of other employees inside the organization. In the case of newly hired scientists, for example, the arrival of new personnel is likely to have stronger positive effects on the performance of incumbent scientists with shorter organizational tenure (Slavova, Fosfuri, Castro 2016).

Overall, what these studies highlight is that employee mobility has relevant implications not just for firm performance, but also for individual performance.

Digitization has lowered the costs of both production and distribution in several knowledge-based and creative industries (Greenstein et al. 2013). Digital distribution channels, and especially streaming platforms, have made it possible to reach global markets in an easier and

faster way. At the same time, however, digitization has also destroyed a complementary asset of some leading, mainstream-positioned incumbent producers, that controlled access to the physical distribution channel (e.g. Greenstein et al. 2013; Benner and Waldfogel 2016). It has been argued that overall, through the new distribution channel, reaching segments of the market other than the mainstream one would become less costly and thus easier (Anderson, 2004; Brynjolfsson et al. 2010). Therefore, we might expect that this technological change affecting a complementary asset of producers might have implications also for the mobility of resources of producers.

In knowledge-based and creative industries, in particular, the mobility of creative resources, such as for example artists in music, is a common phenomenon. Artists, during their career, tend to move either from one company to another or inside the same organizational group. Mobility is in fact a way to get exposure to a different organizational environment, which helps the artist in achieving more novelty in her creative efforts. The advent of digital channels in distribution implies that such resources who moved in their career might be advantaged by a change that favors fluidity of market and an easier match between offer and demand.

We thus argue that:

H_p 1 After digitization, creative employees who moved in their career experience a positive effect on sales performance, compared to those who never moved.

Types of mobility, digital change and performance

Most of the studies on mobility treat mobility as external, namely the worker moves between different organizations. However, mobility can be classified also as internal. In internal mobility the employee moves from one job to another within the same organization (Bidwell and Keller 2014). The longer relationships that internal mobility fosters lead to unique organizational capabilities, as workers develop firm-specific skills (Chadwick and Dabu, 2009). Hiring, by

contrast, allows firms to learn from workers' experiences with prior employers (Rao and Drazin, 2002; Rosenkopf and Almeida, 2003). Bidwell and Keller (2014), in their study on personnel data of a large investment bank, find that jobs with higher performance variability and a larger grade ratio of junior to senior workers are more likely to be filled by internal mobility rather than hiring (i.e. external mobility). In knowledge-based organizations, however, developing and retaining human capital might be less important as the key players take the role of free agents, namely they bring with them the requisite skill levels in most cases (Dess and Shaw 2001; Godart, Shipilov, and Claes 2014). Thus, this might make external mobility more frequent in knowledge-based sectors, such as creative industries.

Moreover, human capital can also be general or firm-specific (e.g. Frank and Obloj 2014; Huckman and Pisano 2006). General human capital consists of non firm-specific skills that are acquired through education and on-the-job general training; in knowledge work, star performance has traditionally been attributed to general human capital, or the skills, characteristics, and competencies of the individual performer (Groysberg, Lee and Nanda 2008).

At the same time, an individual's performance can also be influenced by the organization where he or she works. Organizational factors such as organizational processes, culture, management, and human resource policies may affect worker performance thus leading to firm-specific human capital (Huckman and Pisano 2006). Therefore, these types of investments can become a key strategic tool to create and sustain competitive advantage (e.g. Raffiee and Coff 2016). In their study on surgeon performance, for instance, Huckman and Pisano (2006) found that higher volume in a prior period for a given surgeon at a particular hospital was correlated with significantly lower risk-adjusted mortality for that surgeon-hospital pair. That volume, however, did not significantly improve the surgeon's performance at other hospitals, thus suggesting that part of performance was firm specific. Previous research points out that firm-

specific human capital should lead to higher productivity (Hatch and Dyer, 2004). Recently, however, it has been suggested that this type of human capital might create agency costs that outweigh its productive benefits (Frank and Obloj 2014). More in general, firm-specific human capital is said to sustain competitive advantage if rival firms are unable to acquire or imitate the resource (Raffiee and Coff 2016). Being less valuable to competitors, in fact, it is thought to become an ex-post limit to resource mobility (Peteraf, 1993). Given this relation with employee mobility, tenure at a firm is often used as a proxy for firm-specificity (Crook et al., 2011). Bidwell (2011), for example, used this approach to predict that external hires will have lower initial performance than internal hires—experience can be more valuable within a specific firm than it is across firms. Similarly, studies have found that individuals tend to suffer a decline in performance upon moving to other workplaces (e.g. Campbell, Saxton, and Banerjee, 2014; Groysberg, Lee, and Nanda, 2008; Huckman and Pisano, 2006). The theoretical explanation for this decline in performance is the limited applicability of specific skills after mobility. Namely, once employees move, their specific knowledge is no longer useful, leading to a performance decline (Coff and Raffiee 2015).

Digitization in general, and streaming platforms in particular, can have also implications for firm-specific investments related to these resources. Those who keep moving inside the same organization are more likely to build firm-specific investments over time, compared to those who change organization (Chadwick and Dabu, 2009). Streaming, by favoring mobility of resources, can make firm-specific investments on the single resource less relevant. This would also make the retention of these employees less strategic from the market viewpoint. Specifically, even though such skills are widely applicable in other firms, their use value may differ considerably between firms because of different technologies, product markets, and complementary assets (Teece, 1986). So, if a rival firm has more productive complementary assets, a worker's general

skills may be more highly valued externally than they are by the current employer. This may facilitate mobility despite the presence of firm-specific skills (Campbell et al 2012). For example, Riley et al. (2017) examine the economic value to firms of investing in the training of their employees and firm-level factors that influence how much the firms benefit. Results show that effective investments in human capital and training matter, and that these human capital investments are more impactful when combined with complementary assets of R&D, physical capital, and advertising investments. Overall, we can expect that a technological change such as digitization affecting complementary assets might lead, at the individual level, to an advantage for the performance of those individuals who moved across different companies but to a disadvantage for those who kept moving inside the same organizational boundaries and who tend to build more firm-specific knowledge and capital. Namely, while we might expect that career mobility in general is favored by digitization compared to having experienced no mobility, internal mobility instead might be not advantaged compared to external mobility. Therefore, we argue that:

Hp 2 After digitization, creative employees who moved internally in their career experience a negative effect on the employee sales performance, compared to those who moved externally.

In the next session, we explain the empirical setting we chose to test our hypotheses.

EMPIRICAL SETTING

Music industry, sales rankings and Billboard change

The recorded music industry is perhaps the most visible example of an industry impacted by digitization (Greenstein et al. 2013). The emergence of digitization and Internet, first via downloading and then streaming, opened a new distribution channel and destroyed the physical

one, thus impacting a key complementary asset of leading producers (i.e. the major record companies). Streaming, in particular, makes scouting, launching and testing new products in the market less costly and less risky (e.g. Waldfogel, 2012). Given their relevance for performance (Seabrook, 2015; Trust, 2015), we decided to conduct our analyses on songs charts. In fact, in the music context, the only profitable products are those that become hits and reach the top positions in the charts - in the entire industry, ninety percent of the revenues come from just ten percent of the songs (Seabrook, 2015). Therefore, getting a song in the top 100 singles chart is a critical strategic issue. Rankings of the most popular singles are in fact self-reinforcing, leading to more consumption of the successful products on top of the chart (The Economist, 2017).

We decided to exploit the Billboard's decision to include streams into the song charts as a proxy to understand the effect of streaming on sales according to artists' mobility. Billboard is the leading music trade magazine in the U.S. and the Hot 100 chart, published each week, lists the most popular songs in terms of physical sales, digital sales, streams and radio airplays (Anand & Peterson, 2000; Bhattacharjee et al. 2007). In order to reflect digital changes in the market, Billboard decided to include streams (March 24, 2012) in the chart computation rule. We use this decision as an exogenous change for the analyses. A change in the Billboard chart rule was previously used in the literature as an exogenous shock. In their study, Anand and Peterson (2000) leveraged Billboard's change in 1991 in the methodology to compile the weekly charts to explore how organizational fields are constituted. They show that changes in scope or methodology with which market information is presented can provide a major shock to the participants' understanding of their field. Thus, understanding the effects of this change has also relevant implications for industry dynamics.

This strategy allows us to understand what happens to artists' performance inside the chart when information on sales from a new distribution channel (namely, streaming) is included.

Consequently, we can thus understand the implications of digitization from the demand point of view. In music new products usually take the form of albums, composed by 10-12 songs.

Although Billboard also provides a chart on album sales, we decided to focus on the singles' Hot 100 for two reasons. First, the Hot 100 is the most famous, thus capturing better music tastes from the demand point of view. Second, the Hot 100 allows us to better understand the effects of digitization of music. We therefore consider that focusing the analysis on the singles Hot 100 can best serve the purpose of our paper.

Empirical Strategy and Identification

To evaluate the effect of streaming on sales performance, we face a fundamental inference problem. For a given song, where stream sales are added, we cannot observe the counterfactual, namely the changes on sales performance if stream sales are not added. We thus develop an empirical strategy that takes advantage of several features of our institutional setting to isolate the type of impact of streams inclusion on sales in the chart. We exploit Billboard's decision to include streams in 2012 employing a difference-in-differences strategy, where we compare chart positions of different types of artists according to their mobility (i.e. if they changed company or not in their career), before and after the change in the chart. Our main estimating equation to test Hypothesis 1 is:

$$\text{DEP. VAR.}_{it} = \alpha + \beta_1 \times \text{MOBILITY} + \beta_2 \times \text{CHANGE} + \beta_3 \times \text{MOBILITY} \times \text{CHANGE} + \beta_4 \times \text{CONTROLS}_{it} + \epsilon_{it} \quad (1)$$

where the dependent variable (*week position*) measures song performances in the chart. To test the effect of the change, we regress the dependent variable for artist *i*, in week *t* on: the dummy *mobility*, whether the artist is after the change *streaming*, and the interaction term between the mobility dummy and the change. The interaction term gives us the effect of the change on the artists who moved. We run the regression at the artist level. Robust standard errors are clustered

by company to reduce the potential for overstating statistical significance as a result of serial correlation within artists (Bertrand et al. 2004).

After the first analysis, we test the second hypothesis. We therefore compare artists' performance in terms of type of mobility, by dividing artists who moved into *internal mobility* (which captures those who kept moving inside the same organizational boundaries) versus *external mobility*. We regress the dependent variable for artist i , in week t on: the dummy *internal mobility*, whether the artist is after the shock *streaming*, and the interaction term between the internal mobility dummy and the change. The regression is run at the artist level, and standard errors are clustered by artist.

$$\text{DEP. VAR.}_{it} = \alpha + \beta_1 \times \text{INTERNAL MOBILITY} + \beta_2 \times \text{CHANGE} + \beta_3 \times \text{INTERNAL MOBILITY} \times \text{CHANGE} + \beta_4 \times \text{CONTROLS}_{it} + \varepsilon_{it} \quad (2)$$

DATA

Data construction and sources

The primary data source for this study is Billboard Hot 100 chart that provides information on singles appearing in the top 100 sales positions in the U.S market.

Our data cover music singles sold in the 48 weeks before and after the change in Billboard's sales computation rule. Thus, our final sample consists of 9,600 observations. Every song out of the 9,600 observations in the chart was classified according to the type of artist and record company that produced it. In order to classify artists and check their mobility (i.e. with how many record companies they signed the contract during their career), we relied on several sources (such as Billboard, Wikipedia, the American Association of Independent Music, Discogs, MTV, or news websites) to collect information. This led to having, in our sample, a total of 322 artists produced by 231 record companies.

Measurement

Dependent variables. In order to understand the effect of the inclusion of streams in the chart, we used the dependent variable *week position* to measure songs performance.

Independent variables. *Streaming* identifies the change in Billboard chart and is a dummy taking the value of 1 following the introduction of streams in the sales computation rule of the chart. *Mobility* is a dummy variable taking the value of 1 for artists who changed record company during their artistic careers. *Internal mobility* instead is a dummy taking the value of 1 for artists who moved only inside a major conglomerate, and that we use as a proxy for internal mobility even though these artists actually changed companies inside the same conglomerate. In music industry, in fact, record companies are classified as either major (called *majors*) or independent (called *indies*). For age, tenure and survival to transitions in the industry (Chen, Williams & Agarwal, 2012), major record companies are considered the leading established incumbents of this industry. Starting from the 1970s, their power was built by branch distribution and the ability to create or buy other music companies (Hull, Hutchison, & Strasser, 2011). This means that artists who sign a contract with a major can experience a mobility inside the major organizational boundaries that resembles internal mobility.

Controls. We add a set of controls for events that might affect music sales (e.g. Hampp, 2013), such as *Christmas* (a dummy taking on value 1 in the three weeks preceding Christmas and the one following it, 0 otherwise), and the most important national music awards in the U.S. (Nielsen, 2014), which are likely to positively affect the sales of albums and songs of artists performing or winning the event⁹. Such are controls impact only some songs or artists. Yet, we

⁹ <http://www.billboard.com/biz/articles/news/5793130/maximum-exposure-2013-grammys-bump-more-than-sales>, Accessed November 18, 2015

<http://www.billboard.com/articles/columns/chart-beat/6236464/2014-vmaw-early-sales-gains>, Accessed November 18, 2015

control the effect of these events on all the songs/artists, since we believe they might have an impact on all the songs. These controls are: the American Music Awards (held in November), the Grammy Awards (held in February), the MTV Video Music Awards (held in late August or mid-September) and the Billboard Music Awards (held in December until 2007 and then in May since 2011). Since we perform the analysis at the artist level, we add controls for the *artist age* (calculated using the year of the release of the debut album as a proxy for the professional birth of the artist), the *artist type* (if performing the song as a solo artist, as a duo or as a group, and if featuring another artist or no), and the *artist genre* (male, female, or mixed in case of a duo or group with both male and female performers). Then, we also controlled for difference among artists in terms of prizes the artist won in her career: *Grammy* measures the number of Grammy awards, which are awarded by The Recording Academy to recognize outstanding artistic achievement; *RIAA* instead measures the number of RIAA Gold awards for singles, and is awarded by The Recording Industry Association of America according to track sound recording sales (the Gold award is achieved once the single song has sold at least 500,000 units). These two awards, therefore, signals different types of success, the first one more peer-industry oriented while the second one more commercial-market oriented.

Table 1 provides descriptive statistics.

Insert Table 1 about here

RESULTS

We analyze sales performance for all artists present in our time window (and so regardless of the type of company they are currently signed to) via the diff-in-diff design. For the d.v. week position (Table 2), the interaction term has a negative and significant coefficient ($b = -3.012$,

$p < 0.05$), thus suggesting that, on average, the introduction of streams led to an increase by 3 positions in the chart for artists who moved during their career. This means that, in general, the more an artist changed record company in her career, the more she is advantaged in the streaming channel. This result thus seems to provide support for our first hypothesis.

Insert Table 2 about here

We then replicate the same analysis but this time focusing only on those artists who moved in order to test Hypothesis 2. In particular, our focus is on internal mobility. For the d.v. week position (Table 3), the interaction term has this time has a positive and significant coefficient ($b = 13.775$, $p < 0.01$), thus suggesting that, on average, the introduction of streams led to a decrease almost 14 positions in the chart for artists who kept moving inside the same major during their career. This means that, if an artist did not move outside the boundaries of the major record company, she is disadvantaged in the streaming channel.

Insert Table 3 about here

CONCLUSIONS

This study provides an overview of the effects of streaming on artists' performance in music by focusing on the mobility of these resources. It thus offers two main contributions. First, we start to shed light on the implications of a technological change affecting a complementary asset for firms' resources according to their mobility. According to traditional theories of technological change, established firms, and leading incumbents in particular, encounter many problems in adapting to the new technological base (Tushman & Anderson, 1986; Anderson & Tushman, 1990). Firms are characterized by inertial forces that can take different forms, including the

following: a lack of the new competence base to develop innovations (Abernathy & Utterback, 1978; Tushman & Anderson, 1986); the inability to integrate new forms of knowledge required by the technological change within the organization (Henderson & Clark, 1990; Henderson & Cockburn, 1994); a limited understanding of the nature and trajectories of the technological shock (Tripsas & Gavetti, 2000), including a narrow understanding of new customers (Christensen & Bower, 1996; Danneels, 2010); and a lack of complementary assets to finalize the innovations required by the new technological competence base (Tripsas, 1997; Taylor & Helfat, 2009). For all these reasons, established firms face hurdles in tackling technological change and can lose market leadership (Ansari & Krop, 2012). We think our findings on artists' mobility and performance in the chart can add an important insight to this conversation by uncovering the implications of technological change for firms at a more individual, micro level of analysis.

Second, we also contribute to literature on human strategic management by uncovering exactly which type of mobility is advantaged by this type of technological change. We thus contribute to literature on human capital and its relation to performance (e.g. e.g., Rao and Drazin, 2002; Song, Almeida, and Wu, 2003; Rosenkopf and Almeida, 2003; Singh and Agrawal, 2011; Agarwal, Echambadi, Franco, and Sarkar, 2004), and more specifically internal mobility and firm-specific investments a (e.g. Chadwick and Dabu, 2009; Huckman and Pisano 2006; Raffiee and Coff 2016) by adding a new factor related to technological change that can have different implications on mobility according to the type of mobility considered.

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Table 1. Summary statistics – tot. observations 9,600

Variable	Mean	Std. Dev.	Min	Max
Mobility	0.371	0.483	0	1
Internal mobility	0.340	0.474	0	1
Week position	50.5	28.867	1	100
Streaming	0.5	0.500	0	1
Christmas	0.083	0.276	0	1
American Music Awards	0.042	0.199	0	1
Grammy Awards	0.031	0.174	0	1
MTV Awards	0.042	0.199	0	1
Billboard Awards	0.042	0.199	0	1
Award Grammy	1.544	3.217	0	21
Award RIAA	1.899	2.836	0	21
Emergent artist	0.309	0.462	0	1
Established artist	0.691	0.462	0	1
Artist age	6.165	5.433	0	59
Artist type	2.296	1.695	1	6
Artist genre	1.383	0.623	1	3
Artist mainstream	0.253	0.435	0	1

Table 2. Regression for *artists who moved during their career*

Dependent variable	Week Position
Mobility	13.077*** (1.771)
Streaming	2.667*** (0.794)
Mobility x Streaming	-3.012** (1.268)
Constant	55.179*** (1.216)
Observations	8,755
R²	0.021
Controls	yes

Note: random effects model; standard errors clustered at the artist level

***p<0.01; **p<0.05; *p<0.1

Table 3. Regression for *artists who moved internally*

Dependent variable	Week Position
Internal mobility	-6.665** (2.598)
Streaming	-5.147*** (1.233)
Internal mobility x Streaming	13.775*** (2.125)
Constant	65.885*** (5.257)
Observations	3,349
R²	0.007
Controls	yes

Note: random effects model; standard errors clustered at the artist level

***p<0.01; **p<0.05; *p<0.1