How incumbents manage waves of disruptive innovation: an empirical analysis

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Abstract: Innovation scholars have long looked into the managerial practices that incumbents should adopt to promptly respond to disruptive innovations (see, e.g., Christensen, 1997; Birkinshaw and Gibson, 2004). These practices include, among the others, the use of an open innovation approach or the establishment of ambidextrous organizations. However, this body of research has not analysed how these practices develop and unfold over time, although very often incumbents are confronted with waves of disruptive innovations that cyclically take place along the lifecycle of an industry (Moreau, 2013). This paper investigates this issue through a historical analysis (Gottschalk, 1969) of the global music industry. For each wave of disruptive innovation that hit this industry over the last fifteen years (digital music distribution, permanent digital download and streaming), we analyse the reaction of incumbents and develop a model suggesting how incumbents develop over time managerial practices to respond to cycles of disruptive changes.

Keywords: innovation management, disruptive innovation, disruptive technological changes, incumbents, music industry
1 Introduction

Innovation scholars have long investigated the concept of disruptive innovation (see, e.g., Christensen, 1997; Christensen and Overdorf, 2000; Yu and Hang, 2009), an innovation process that deeply changes the rules of competition in a given industry and brings new companies to top ranks of that industry by disrupting the established position of incumbents. More recently, several practitioners (Downes and Nunes, 2013) shed light on the magnitude of this phenomenon due to the enabling effect of digital technology. Indeed, many firms today exploit digitalization to accelerate the development of disruptive products or services to reach global markets in record times (see, for example, Kohler et al., 2009; Yoo et al., 2012; Hylving, 2014).

According to this theory, many large companies fail to stay at the top of their industries when disruptive innovations enter established markets. This because disruptive innovations have some characteristics which make them unattractive to established players. These characteristics are: (i) disruptive products/services are simpler and cheaper, they generally promise lower margins, not greater profits; (ii) they are first commercialized in emerging and small markets; (iii) established firms’ most profitable customers generally do not want products/services based on disruptive innovations.

Following the seminal studies of Christensen (1997), many scholars have tried to refine the initial definition of disruptive innovation, trying to differentiate the concept of “disruption” in different typologies, i.e. technological, radical product and business-model (see, e.g., Danneels, 2004; Markides, 2006). However, as highlighted by Wessel (2016), most scholars today agree in considering an innovation as disruptive when it is (i) “cheaper, from a customer perspective; (ii) more accessible, from a usability or distribution perspective; (iii) use a business model with structural cost advantages, relative to existing solutions”.

In addition, research suggests that newcomers are usually disruptors, while incumbents are often unable or unwilling to invest in disruptive innovations and promptly respond to their threat. In fact, several examples of incumbents that succeeded in the face of disruptive innovation exist (see, for example, Danneels, 2004, Bergek et al., 2013), and it appears that they managed to do so thanks to the development of dedicated strategic and organisational approaches. The use of open innovation (Chesbrough, 2005; West and Gallagher, 2006a, 2006b; Lichtenthaler, 2008), as well as creation of an ambidextrous organisation (Rotemberg and Saloner, 2000; O’Reilly and Tushman, 2004; Birkinshaw and Gibson, 2004), or the establishment of a spin-off as a possible solution to incubate disruptive innovation opportunities (Yu and Hang, 2009) are examples of these practices.

However, this body of research, although rich in terms of managerial implications, has not studied how incumbents develop and change over time their response to the threat of disruptive innovations. Indeed, very often, incumbents are confronted with waves of disruptive innovation, which cyclically take place during the lifecycle of an industry (see, e.g., Moreau, 2013). Therefore, understanding whether and how the response of incumbents to the emergence of disruptive innovation change over time, along different waves of disruptive technological change, is a very timely and relevant topic to address. In particular, not only innovation scholars will benefit from this study, by contributing to the lively academic debate on how firm-level managerial practices to respond to disruptive innovations are adopted over time, but also managers and practitioners in the innovation units of organisations to anticipate new market trends and evaluate new business opportunities.
The paper looks into this issue by conducting a historical analysis (Gottschalk, 1969) of the global music industry. In this analysis, we will identify different waves of disruptive innovation that have hit this industry over the last fifteen years (i.e. digital music distribution, permanent digital download and music streaming). For each wave of disruptive innovation, we identify how incumbents have responded to the threat and develop a model suggesting how these firms develop over time managerial practices to respond to disruptive technological changes.

1 State-of-the-art

Innovation scholars have long looked into the managerial practices that incumbents should develop to promptly and successfully respond to the threat of disruptive innovations.

According to Bower and Christensen (1995), one of the main issue in detecting disruptive innovations concerns the people questioned to evaluate the effectiveness of new products or services incumbents would like to launch in the market. In this case, they usually involve mainstream customers to test the market penetration of their innovations. Therefore, if the visible performance of products or services do not satisfy current needs of the evaluator, the firms will be addressed to disinvest and abandon those innovations. Even Christensen and Bower (1996) have emphasized this aspect, highlighting how much damaging becomes the user-centered approach for established firms, because it can slow their propensity to engage in disruptive innovation. In this case, the authors suggest to avoid mainstream customers as unique judges in the evaluation process of new products or services and to involve external actors. From an internal perspective, several authors (Ghoshal and Bartlett, 1994; Adler et al., 1999; Birkinshaw and Gibson, 2004) proposed the adoption of contextual ambidexterity as a solution to promote intrapreneurship among employees that allow pursuing within the same organizational unit different businesses following significantly different routines and processes.

In addition, as proposed by several authors (Bower and Christensen, 1995; Christensen, 1997; O’Reilly and Tushman, 1996; Rotemberg and Saloner, 2000; Birkinshaw and Gibson, 2004), incumbents can develop business units specifically dedicated – or structural ambidextrous organisations – to manage disruptive innovations. In this case, they point out how much damaging is for an established firm to develop and launch both mainstream and disruptive products within a unique value proposition and associated business model. Therefore, the creation of an independent unit, separated from the traditional business of the firm, should enable the application of a new business model, and encourage the management to overcome the user-centered approach, going to anticipate the disruption when it is just at the initial point of its evolutionary process. Similarly, Christensen and Overdorf (2000) underlined the importance to create new business units, separated from the traditional business of a firm, or to spinout an independent organisation in order to detect or react to a disruption.

However, disruptive innovations require established firms to adopt new resources, assets and business model design choices (Christensen, 1997; Birkinshaw and Gibson, 2004). This prompted several authors (such as Chesbrough, 2005, 2010; West and Gallagher, 2006a, 2006b; Lichtenhaler, 2008; Chiaroni et al., 2010; Bogers, 2011) to advance the open innovation approach as a solution that allow established firms detecting and evaluating disruptive innovations. This approach consists in absorbing external knowledge capital (outside-in process or inbound) and transfer innovative ideas to the
outside environment (inside-out process or outbound).

Moreover, Kostoff et al. (2004) established a disruptive technology framework, which highlights the phases a firm should go through to identify disruptive innovations, such as a) the involvement of external actors in the evaluation process of new products or services, b) the exploitation of managerial commitment to evaluate potential disruptions (see, also, Sull et al., 1997), and c) the need of a better exploitation of internal capabilities through the creation of dedicated teams.

In addition, Adner (2002), starting from the idea of “performance oversupply” (see, e.g., Christensen, 1997), highlighted how the emergence of a “competitive disruption” happens when a firm continues to improve the performances of existing products over the requests of the final users, causing a reduction of their marginal utility and of their willingness to purchase those products. In this case, the final consumers could prefer similar products with slightly worse performances, but also at lower price. Other contributions suggested evaluating alternative strategies to allocate resources. In particular, according to Christensen and Bower (1996), incumbents are more inclined to allocate their resources for products or services strongly demanded in mainstream markets due to the heavy cost/revenue structure this kind of firms has to sustain. In this case, the problem of resources allocation is strictly related to the business model adopted by incumbents within the industries where operate. In fact, the problem of allocation of resources has becoming more prominent whether it correlated with the opportunities offered by emerging markets.

For this reason, recent contributions (see, e.g., Colombo et al., 2014; Corsi and Di Minin, 2014; Pinkse at al., 2014; Huesig et al., 2014; Kim and Min, 2015; Wan et al., 2015) pointed out how this emerging markets are becoming more and more enablers of disruptive innovations, due to the fact that their contextual characteristics stimulate relevant changes in the product design and business model of firms.

Following these premises, we summarize in Table 1 the managerial practices that incumbents should develop and deploy to successfully respond to the threat of disruptive innovations.
Table 1 The managerial practices required to respond to the threat of disruptive innovations

<table>
<thead>
<tr>
<th>MANAGERIAL PRACTICES</th>
<th>REFERENCES</th>
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<tbody>
<tr>
<td>Avoid mainstream customers as unique evaluators of new products or services</td>
<td>Bower and Christensen (1995)</td>
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<tr>
<td></td>
<td>Christensen and Bower (1996)</td>
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<td></td>
<td>Christensen (1997)</td>
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<tr>
<td>Look on the marginal utility that consumers can obtain from new products or services</td>
<td>Adner (2002)</td>
</tr>
<tr>
<td>Use an open innovation approach to allow established firms absorbing external knowledge capital and innovative technology solutions</td>
<td>Chesbrough (2005, 2010)</td>
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<tr>
<td></td>
<td>West and Gallagher (2006a, 2006b)</td>
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<td></td>
<td>Lichtenthaler (2008)</td>
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<td></td>
<td>Chiaroni et al. (2010)</td>
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<tr>
<td></td>
<td>Bogers (2011)</td>
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<tr>
<td>Exploit internal capabilities through the creation of dedicated teams</td>
<td>Christensen and Overdorf (2000)</td>
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<tr>
<td></td>
<td>Kostoff et al. (2004)</td>
</tr>
<tr>
<td>Exploit managerial commitment to evaluate potential disruptions</td>
<td>Sull et al. (1997)</td>
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<td></td>
<td>Kostoff et al. (2004)</td>
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<tr>
<td>Create separate organizations – or structural ambidextrous organisations – or acquire appropriate small companies</td>
<td>Bower and Christensen (1995)</td>
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<td>Christensen (1997)</td>
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<td>O’Reilly and Tushman (2004)</td>
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<td>Rotemberg and Saloner (2000)</td>
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<td></td>
<td>Christensen and Overdorf (2000)</td>
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<tr>
<td></td>
<td>Birkinshaw and Gibson (2004)</td>
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<tr>
<td>Build contextual ambidextrous organizations</td>
<td>Ghoshal and Bartlett (1994)</td>
</tr>
<tr>
<td></td>
<td>Adler et al. (1999)</td>
</tr>
<tr>
<td></td>
<td>Birkinshaw and Gibson (2004)</td>
</tr>
<tr>
<td>Allocate financial resources in emerging markets</td>
<td>Colombo et al. (2014)</td>
</tr>
<tr>
<td></td>
<td>Corsi and Di Minin (2014)</td>
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<td></td>
<td>Pinkse et al. (2014)</td>
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<td></td>
<td>Huesig et al. (2014)</td>
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<td></td>
<td>Kim and Min (2015)</td>
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<td></td>
<td>Wan et al. (2015)</td>
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In the next paragraph, we focus on the global music industry and on its history in the last fifteen years to highlight how incumbents have adopted these managerial practices to respond to the threat of different waves of disruptive innovation.

3 Methodology and empirical analysis

From an empirical point of view, the paper studies how incumbents manage waves of disruptive innovation that cyclically take place during the lifecycle of an industry through a historical analysis (Gottschalk, 1969). Information gathered from published sources
about the occurrence of the main disruptive technological changes introduced in the music industry during the past fifteen years was analysed. Historical analysis relies on information collected at the time when these innovations appeared in the industry. In particular, we have conducted an in-depth analysis on the music industry worldwide.

The choice to focus on this industry arises from the high number of technological discontinuities that occurred in this section, since the diffusion of Internet, personal computers, digital mobility and broadband connections (Moreau, 2013; Lamont, 2013; Brustein, 2014; Dredge, 2014; Cookson, 2015; Garrahan, 2015; Witt, 2015; Gapper, 2015; Garrahan and Bradshaw, 2015; Bradshaw and Bond, 2015; Bradshaw and Garran, 2015; Richter, 2015; Dredge 2015; Gauthier-Villars, 2015; Karp, 2016). Our aim is to highlight the development and the implementation of the managerial practices for managing waves of technological discontinuities. Therefore, we are going to identify the firm-level managerial practices that incumbents adopt to manage waves of disruptive innovations that cyclically take place during the lifecycle of an industry. Our aim is to investigate whether and how the development and the implementation of these practices follow a dynamic process, which evolves over time as a consequence of a learning process of managerial practices for managing disruptive phenomena that cyclically take place in a given industry, as well as of enabling factors that characterize the lifecycle of the industry.

For our historical analysis, we have analysed as primary sources journals, magazines and reports that have dealt with these innovations as soon as happened in the music industry. In particular, an average of hundred sources of information were gathered and analysed for each wave of disruptive innovation, for over three-hundred sources. The choice to select more articles for each wave of disruptive innovation facilitated both single-case study analysis and cross-case comparisons. In addition, a content analysis (Weber, 1990) was performed on the material gathered, in order to cluster the information contained in the selected documents. The most helpful and frequently referenced sources of information were Bloomberg, Business Insider, Forbes, Fortune, The Economist, The Financial Times, The Guardian, The New York Times, and The Wall Street Journal, which were searched using professional full-text journal databases such as InfoTrac and LexisNexis. In order to select and accept the sources of information, we applied the control criteria for historical analysis suggested by Golder and Tellis (1993) in their work, which are (i) competence, (ii) objectivity, (iii) reliability, and (iv) corroboration.

In-depth description of the waves of disruptive innovation analysed in the paper is reported in Paragraph 3.1.

3.1 History of the music industry

In this paragraph, we report a brief history of the global music industry. By relying on the work of Moreau (2013), who analyses the main disruptive technological changes occurred in the music industry since its birth until the emergence of Internet and ICT, we extend his analysis on the main waves of disruptive innovation since the diffusion of Internet, personal computers, digital mobility and broadband connections.

The revolution in the music industry was possible since the ‘90s, with the diffusion of Internet and personal computers and since the 2000s, with the digital mobility and
broadband connections, which allowed entering in the era of digitalization of music. The origin of the digital music distribution is recognized to Napster, the company that created Napster MusicShare, a peer-to-peer (P2P) file-sharing program (i.e. a program that can directly connect computers within a network, with the aim to allow the communication and the exchange of data between them) specialized in the exchange of music files encoded by the MP3 format. The software was launched in 1999, when Shawn Fanning and Sean Parker completed the writing code. This software had a revolutionary potential, facilitating – along with other programs such as Kazaa, Mopheus, Limewire, eMule and protocols such as BitTorrent – the transition in the music industry to the digital music.

The company offered its software and its services free to its users and allow making available among users the MP3 files in their hard drives. The program allowed to search for MP3 files inside folders shared by other users and, after making an indexing of files, automatically manage the exchange of files across the Internet. These were the main features of Napster, although it included additional services such as a chat room available to users, who could discuss about topics belonging to the music field. In addition, there was a space available to artists for offering users the information regarding their music. In order to access the community users had to download the software Napster MusicShare from the site of the company, and then register by creating an account. Then, the user was asked to create a “user library”, in which were included all the contents to be shared with the community. When a user of the community sought a song, the servers were responsible for making available only the songs of users actually online, thus allowing the peer-to-peer exchange. The music majors opposed the Napster service, since its inception, because it represented a serious threat to their ability to create profits. On 6 December 1999, the Recording Industry Association of America (RIAA) decided to take Napster to court with the charge\(^1\) of copyright infringement. Although the Napster service was offered to customers free and was regarded as illegal by the majors, we observe how it was the first service to demonstrate the digital channel as a viable option to distribute and commercialize “digital goods”. In particular, Napster enabled several attempts to propose legal distribution systems of music, either made ex-novo by the holders of the rights (i.e. the major recorded companies), or legalizing/sponsoring in various ways the already existing services. Napster, which reached, in the period of maximum expansion, 80 million of registered users, demonstrated the ability to create a business on digital distribution, an opportunity that was swiftly exploited by Apple with its iTunes service.

In particular, Apple, with its iTunes Music Store (launched on April 28, 2003), represented the originator of the second wave of disruptive innovation, i.e. the permanent digital download. Apple was the first company to develop a consistent and profitable business model based on the digital distribution, speeding up the transition from the physical to the digital distribution of music contents. The success of iTunes, however, was accelerated by the evolution and expansion of the digital mobility that allowed Apple to enlarge its user base. The iTunes of Apple allowed users not only to buy albums, but also individual pieces, for the modest sum of $ 0.99 per song. The service brought a change in the way of promotion and distribution of music: users could choose and buy just few songs of the album instead all of them. In this case, iTunes eliminated the concept of bundling (i.e. the explicit grouping of two or more products or services, which allows a company to sell them in packages at a predetermined price) that characterized

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\(^1\) “In stark contrast to these legitimate companies, Napster is not developing a business around legitimate MP3 music files, but has chosen to build its business on large-scale piracy. Napster seeks to profit by encouraging and facilitating the distribution and reproduction of millions of infringing MP3 files. Moreover, by deliberately refusing to maintain any information about its users in order to make copyright enforcement next to impossible, Napster has created a virtual sanctuary where music piracy can and does flourish on a monumental scale.” (A&M Records Inc. v. Napster Inc.: 12)
the music industry until now as far as the sales of albums are concerned. Another aspect that favoured the success of iTunes derived from the complementarity between iTunes and the iPod music player. Indeed, iTunes was designed not just as an additional software for the management of the device, but also as a mandatory component. The booming sales of the iPod led Apple to create a community to whom it offered its software services, initially limited only to the purchase of music through the iTunes Store. The success of iTunes was immediate with consumers (the user base is at the end of 2014 of over 800 million of users). In the first week of activity of the store, more than one million of songs were purchased, while the milestone of 100 million was achieved in the next 15 months. Over time, Apple decided to introduce new products in the store. In 2005, following the iPod 5th generation, which enabled the playback of video contents, the company introduced the sale and marketing of films, videos, television episodes and video podcasts. Rental of films, however, was introduced only from 2008. A further change made to iTunes occurred on July 2008, when in conjunction with the release of iPhone OS2, Apple decided to create the section App Store in order to allow iPhone owners to download applications for their devices. The sale of iPhone applications in the store decreed a new success for the company and in record times, the sale of applications became the major source of revenues for the iTunes platform. However, the revenues from the permanent digital download swiftly began to deteriorate due to the success of the music streaming services, mainly enabled by the diffusion of broadband connections. In particular, the origin of the music streaming service is recognized to Spotify AB, the company that launched on October 2008 its music streaming service Spotify. This service has achieved considerable success passing from 10 million of customers on September 2010 (2.5 million paying subscribers) to 75 million of active users on July 2015 (20 million premium users\(^2\)) and it is still growing. This was surely enabled by the diffusion of broadband connections. Actually, Spotify has the leadership in the subscriptions of pay type, with a percentage of 37% of the market, and to finance its growth, the company raised $ 526 million from financial investors, such as Goldman Sachs Group Inc., Baillie Gifford & Co., Discovery Capital Management, Lansdowne Partners, Rinkelberg Capital and Senvest Capital. The heart of Spotify business model is its e-business platform, which provides a digital distribution of contents – a trend already used in the same sector by iTunes – with the difference to “hire” music contents and not to sell them. In addition, one of the main strategies used by Spotify to increase its user base was to ensure the maximum compatibility between its services and the various platforms. Indeed, Spotify is present on Windows, OSX and Android platforms. Moreover, not possessing proprietary devices, which create greater integration between hardware and its service, the company created partnerships with hardware manufacturers and audio speakers. Among the most important agreements of this type, we can quote the partnership with Sony to have the application inside the console gaming PS4. Further agreements have been undertaken with manufacturers of speakers such as Bang & Olufsen or Sonos or smart TV manufacturers such as LG, Sony, Samsung and Philips. Spotify signed more relevant partnerships with mobile operators such as Vodafone Italia. Moreover, Spotify created a strategic partnership with Coca-Cola, which contributed with $ 10 million to finance Spotify in exchange of the possibility for the two companies to exploit the brand of each other. Looking on the user base, Spotify is the market leader with Apple and Deezer as second movers. Other companies, such as Tidal, still represent a niche product. It is possible to observe how the success of the new music streaming services is due to the “return” to the concept of bundling, in an “all you can eat” offering. In particular, users of

\(^2\) Spotify offers two different types of service. The first one is the free one, where customers have free access to the music catalogue with limited functionalities and with the presence of ads. The second one is the premium one, which allow advanced functionalities and the possibility to download the music in local storages.
these services, after paying a monthly subscription fee or for free are allowed listening the music available in the musical catalogue of these services.

Table 2 summarizes the waves of disruptive innovations – and their main characteristics – that have accompanied the history of music since the diffusion of Internet, personal computers, digital mobility and broadband connections.

Table 2 Waves of disruptive innovation – and their main characteristics – since the diffusion of Internet, personal computers, digital mobility and broadband connections.

<table>
<thead>
<tr>
<th>YEAR</th>
<th>WAVE OF DISRUPTIVE INNOVATION</th>
<th>MAIN CHARACTERISTICS</th>
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</table>
| 1990s | Digital music distribution | - Elimination of the physical support that causes a reduction of the production and distribution costs of music contents  
- The new digital channel causes a reduction of the competitive advantage of the major companies (such as EMI, Sony Music Entertainment, Universal, Warner and BMG) that controlled the distribution of music contents through the physical channel  
- Independent or “minor” record companies start to exploit the new digital channel to distribute their music contents  
- Entry of new digital distributors, such as Apple and Google, with a completely different business model from that of major companies  
- Major companies lost the control on digital music distribution, especially the “direct contact” with end users, and become content producers  
- Unbundling of albums in favour of single songs that are purchased by end users through the payment of the single product  
- The distribution and promotion of single songs is carried out through the digital channel  
- Main initial users are people willing to give up to high audio performance for lower prices than physical music contents  
- Possibility of listening a higher number of single songs in mobility  
- Lower distribution costs of music contents because they become “digital goods” |
| 2000s | Permanent digital download |  |
Music streaming

According to the historical analysis, three waves of disruptive innovation, i.e. digital music distribution, permanent digital download and music streaming, gave a significant contribution for the evolution of the global music industry. In particular, they allowed the passage from a physical to a digital channel for the distribution of music contents. Moreover, their characteristics effectively reflect those described in the literature by Christensen (1997) and Wessel (2016) if we consider that these waves allowed (i) the reduction of competitive advantage of major companies that controlled the physical channel of music contents distribution; (ii) lower prices for end users for purchasing music contents and lower costs for record companies for realizing “digital goods”; and (iii) a completely different business model for new digital distributors compared to that of the majors.

In the following paragraph, we point out the reactions – in terms of adopted managerial practices – that incumbents pursued to face their threat.

4 Discussion and results

From the historical analysis, we observe how the global music industry evolved according to three main waves of disruptive innovation, e.g. digital music distribution, permanent digital download and music streaming, enabled by Internet, personal computers, digital mobility and broadband connections.

In the first wave of disruptive innovation, Napster was recognized as the originator of the digital distribution. Through its peer-to-peer exchange program, Napster allowed users to recognize within the digital channel a new way to source of music contents. The new service negatively affected the sales of the majors, which were incumbents in the physical channel. Indeed, the major labels (such as Universal Music Group, Sony Music, Warner Music Group and EMI) controlled the entire supply chain of the music industry, from contents production to the physical distribution of the product to the end users. With the digital distribution, the majors loosed part of their control and revenues from the delivery of music contents. Their reaction was double. Firstly, they forced the closure of Napster through a lawsuit, which led to the elimination from the industry of the newcomer. Simultaneously, majors decided to create within their organisation dedicated divisions to explore new potential opportunities offered by the digital distribution (see, in this case, Afuah et al., 2002). In particular, the dedicated units started to create online stores within which selling music in catalogues. However, this response did not achieve the desired
results, because users did not have a single store to turn – such as iTunes – but they were forced to turn to different platforms for creating their own music catalogue. The failure of this response and the exit of Napster from the industry allowed therefore Apple to create iTunes, which completed the digital revolution started with Napster.

The control of digital distribution by the majors was questioned by the second wave of disruptive innovation occurred in the music industry, i.e. the permanent digital download, which saw its ancestor in the iTunes Music Store of Apple. Even in this case, the majors suffered the impact of this innovation. They could not believe in the success of this new service and decided to deliver their music contents on condition that Apple made the new service available only for Macintosh users (approximately 5% of the potential market). The contract involved for the supply of music contents the payment for artists and majors of about 30% of the revenue generated from the sale of songs through iTunes. In this way, the majors created a partnership with Apple to become providers of music contents in the digital channel. However, this was in contrast to the traditional business model of the majors, with which had the control over the whole supply chain of distribution. By doing so, they considered the Apple iTunes business model only as an alternative solution to their online stores, because it ensured a lower profit than the one guaranteed by their online stores. This firstly allowed the majors to maintain the control of the digital channel, but very soon, the situation changed. Indeed, the unexpected high levels of sales of iTunes showed the consistency of Apple business model and pushed the majors to close their online stores and embrace the Apple solution. The majors renegotiated the initial contract, which included the possibility for Apple to sell music contents also to Windows users. Accordingly, the majors loosed the control of digital distribution in favour of Apple, which became the main incumbent of the industry. In front of the new “disruptor”, they instead remained content providers and partners of revenues in the digital channel, as well as incumbents within the physical channel. In this phase, we can observe how the success of the permanent digital download, with its main icon in iTunes, enabled the creation of music streaming services, in particular Spotify, since users became so confident with the digital distribution to accept the transition from the possession to the “hire” of music contents.

Therefore, the third wave of disruptive innovation was due to the music streaming services. Spotify disruptively brought this technological wave within the industry and undermined the position of incumbents in the digital distribution. The market leader Apple firstly evaluated the launch of complementary products of iTunes to not cannibalise the sales of the existing product. This decision was not sufficient for Apple to stop the decline in the music sales caused by a migration of users to the streaming services. Therefore, Apple secondly decided to cannibalise its iTunes service by acquiring Beats Electronics (and its Beats Music service) in order to close the gap in the streaming service from rivals such as Spotify.

Figure 1 summarizes our results in a model, which points out the managerial practices incumbents have adopted to react to each wave of disruptive innovation.
Figure 1 Waves of disruptive innovation of the global music industry since the diffusion of Internet, personal computers, digital mobility and broadband connections, and the managerial practices adopted by incumbents to react to each wave.
Accordingly, the sequence with which incumbents have adopted the managerial practices seems to highlight the implementation of a learning process of managerial practices for managing disruptive phenomena that cyclically take place in a given industry, as well as of enabling factors that characterize the lifecycle of the industry itself.

In particular, incumbents start to manage disruptive businesses by initially exploiting internal managerial practices. The historical analysis of the global music industry highlights the establishment of ambidextrous organisations, without highlighting other strategies that literature suggests. In this case, we retain that the creation of dedicated teams, as suggested by Christensen and Overdorf (2000) or Kostoff et al. (2004), could be an effective strategy to pursue the exploration of emerging businesses, such as the disruptive ones.

Therefore, every time that a new phenomenon with similar characteristics of the previous one emerges with a higher magnitude, firms can pursue two alternative strategies. Firstly, they can share with other firms – as well as with newcomers themselves – the management of the new phenomenon through the creation of partnerships or similar forms of collaborations, i.e. joint ventures, mergers, consortia, franchising.

Secondly, whether the sharing of resources or risks with other firms, does not allow pursuing sustainable economic advantages, they can acquire from the external environment knowledge capital and technology, or, in other words, they can develop an inbound open innovation approach.

5 Conclusions

The paper discusses how incumbents develop and unfold over time managerial practices to promptly and successfully respond to the threat of waves of disruptive innovation that cyclically take place during the lifecycle of an industry. In particular, through the historical analysis of the global music industry, we have highlighted the main waves of disruptive innovation over the last fifteen years (e.g. digital music distribution, permanent digital download and music streaming) and their main enabling factors (e.g. Internet, personal computers, digital mobility and broadband connections). Therefore, we have studied the reaction of incumbents in front of these waves of disruptive innovation.

We found that, for each wave of disruptive innovation, incumbents have implemented alternative strategies, with the following sequence: (i) exploitation of internal managerial practices, such as the creation of ambidextrous organisations, (ii) the creation of partnerships, such as the establishment of relationships with specific actors operating in the same supply chain; (iii) the implementation of acquisitions in order to absorb external knowledge capital and innovative technology solutions.

Our results suggest that the management of waves of disruptive innovation that cyclically take place within the lifecycle of an industry is a dynamic process, which evolves over time as a consequence of a learning process of both (i) the managerial practices that incumbents adopt over time to manage phenomena of discontinuous and technological change; and (ii) the enabling factors that characterize the lifecycle of context.

The findings of this exploratory research, due to the methodology that we used, cannot be
generalized to any population of incumbents or industries. However, our aim is to shed light on a relevant although under-researched innovation management issue and inform future research into this field of study. The results of the paper can benefit first of all the innovation management scholars. In particular, our study contributes to the lively academic debate around how firm-level managerial practices to respond to disruptive innovations develop over time.

Even though the research is characterized by an exploratory connotation and the data collection does not have a strong statistical valence, from a managerial perspective the paper brings to light interesting implications for managers and practitioners, especially, for the innovation units of organisations. In particular, this study hopefully gives managers and practitioners a set of insights and examples about how waves of disruptive innovation can be manage through the development and the implementation of determined strategic and organisational solutions in order to both anticipate new market trends and evaluate new business opportunities.
References and Notes


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