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# **DISRUPT THE DISRUPTOR: RETHINKING ‘DISRUPTION’ IN DIGITAL INNOVATION**

*Completed Research*

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## **Abstract**

*Disruptive innovation has been described in the literature as a force that sweeps aside existing technology and business models. This paper presents a case study that aims to understand the disruptive nature of digital innovation. It questions how and why digital innovation comes to have (or not) a disruptive effect. It describes a case study of App and mobile innovation and offer preliminary findings of the case. It argues that digital innovation based on App and mobile technology development could offer a different model of disruption than has been discussed in traditional literature on disruptive innovation that is largely based on manufacturing.*

*Keywords: disruptive digital innovation, disruptive innovation, digital innovation, car sharing rides, Uber.*

## **1 Introduction**

The term disruptive innovation was coined by Christensen in 1997 in his book ‘Innovator's Dilemma: When new technologies cause great firms to fail’. The book discusses innovation in the industrial sector. It is largely based on the economics of Schumpeter that innovation is a necessity for any activity that seeks profit and an essential driver of competitiveness and economic dynamics (Hanush and Pyka 2007). For Schumpeter, innovation is at the core of economic change as it causes what he described as, “creative destruction” (Schumpeter 1942). Christensen has followed this influential<sup>1</sup> initial book with many other publications on disruptive innovation.

The notion of disruptive innovation has been developed to explain innovation in the industrial sector and how entrepreneurs and small entrants to the market could offer products that could ultimately replace established offerings. The assumption is that large companies are not interested in small emerging markets and are too slow to take decisions to adopt new technology. Production lines, technological and labour capability, and the need to attend to existing customers are seen to be stifling large players from attending to the low end of the market allowing new entrants to disrupt (Christensen 1997; Christensen and Raynor 2003). This view portrays the incumbents as rather helpless players in this innovation battle.

However, the development and wide spread of digital technology has paved the way for a new class of innovation namely, digital innovation. Digital Innovation is “the carrying out of new combinations of digital and physical components to produce novel products.” (Yoo et al. 2010). Yoo et al. (2010) explain that this term focuses on product innovation as oppose to process innovation that dominates the IS literature.

Research in digital innovation is in its infancy and we know little about the nature of its disruptive impact. This research aims to understand the disruptive nature of digital innovation. It questions how and why digital innovation comes to have (or not) a disruptive effect. It does so through examining a case study of a current mobile-based application that provides taxi services. The company that developed and run the App is called Uber. It was formally launched in 2010 in San Francisco and since then spread out around the world to operate in over 250 cities. Uber App serves as a current case of a digital innovation that has rocketed the market value of Uber to over 40 billion Dollars and is creating a storm of oppositions and lobbyists in many markets. As this is an on-going research, we have begun data collection and intend to analyse this and further data to be collected applying an inductive logic of inquiry.

This case study paper is organised as follows. The second section after the introduction offers a brief review of research on disruptive innovation and digital innovation. The third section presents the research method. The fourth section presents the case study. The fifth section discusses the preliminary findings. The final section offers a brief conclusion to the paper.

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<sup>1</sup> A search at Google Scholar reveals that the initial book is currently cited by 12,087 scholarly publications.

## **2 Literature Review**

### **2.1 Disruptive Innovation**

The term “disruptive technology” as coined by Christensen (1997) refers to a new technology having lower cost and different performance. Its performance appears lower when measured by the traditional criteria of performance as seen by mainstream customers based on existing mainstream technology but also has higher ancillary performance (Utterback and Acee 2005). Christensen differentiates between two types of innovation; sustaining and disruptive. Sustaining innovation is about improving the performance of products in the existing mainstream market. However, disruptive innovation utilizes the speed of technological changes to either target the low-end of the market, open up a new market or a combination of both.

Christensen (1997, p115) points out that disruptive innovations are technologically straightforward. They offer different product attributes such as a simpler design or lower price to cater for the low-end segment of the market. At the first, the product or service is offered to the bottom of the market but then it continues to evolve and challenges the top of the market to ultimately replace existing competitors. However, new market disruption means opening up new markets and creating a new customer base that is different from the existing customer groups. New market disruptions avoid early direct competition with mainstream products and services. However, with the increase in user groups, improvement in product performance and innovations, disruptive innovation can offer a greater convenience compared with older products, eventually attracting the mainstream consumer groups.

Bower and Christensen (1995) explain that disruptive technologies introduce a very different package of attributes from the one mainstream customers historically value as they are likely to perform far worse in one or two dimensions that are particularly important to those customers. They suggest that at first, disruptive technologies tend to be used and valued only in new markets or new applications and offer the example of Sony’s early transistor radios that sacrificed sound fidelity but created a market for portable radios by offering a new and different package of attributes namely; small size, light weight, and portability (Bower and Christensen 1995). Products that are based on disruptive technologies are typically “cheaper, simpler, smaller and frequently more convenient to use.”(Utterback and Acee 2005). The pattern of ‘disruptive innovation’ has three elements: 1) Technology that simplifies, standardizes and structures solutions. 2) Business models that deliver simple solutions affordably, accessibly and profitably. 3) A value network of companies that reinforce each other and form the infrastructure. (Christensen et al. 2009)

In his publications, Christensen discusses the impact of technological change and how established firms came to lead and then lag in developing and adopting new technologies compared to new entrant firms. With Bower (1995) they state that “the most consistent patterns in business is the failure of leading companies to stay at the top of their industries when technologies or markets change.” (Bower and Christensen 1995). They found that this pattern of failure is “especially striking in the computer industry” and gave examples of how IBM dominated the mainframe market but missed by years the emergence of minicomputers. Digital Equipment dominated the minicomputer market but missed the personal-computer market almost completely and Xerox let Canon create the small copier market.

They explain that disruptive innovation occurs due to five inter-related factors. These factors are: 1) Companies depend on customers and investors for resources. Customers drive internal decision making because companies are resource-dependent. New disruptive technologies do not initially meet the needs of mainstream customers and hence it is “nearly impossible” for companies to develop an analytically convincing investment case for diverting resources from current known customer needs in established mainstream markets to customers and markets that seem insignificant or do not yet exist

(Bower and Christensen 1995). 2) Small and emerging markets do not meet the growth needs of large companies and hence companies take delayed decisions to enter these markets. Christensen (1997) finds that one of the reasons why established firms delay the introduction of new technologies is their fear of the cannibalizing of sales of their existing products. However, when established firms wait until a new technology has become commercially mature in its new applications and then launch their own version of the technology only in response to an attack on their home markets, the fear of cannibalization can become a self-fulfilling prophecy (Christensen, 1997). 3) Markets that don't exist cannot be analyzed. 4) An organization's capabilities define its disabilities. A process that creates the capability to perform one task concurrently defines disabilities to execute other tasks (Christensen and Overdorf 2000). 5) Technology supply may not equal market demand which means that there will be new technology in search of a new market. Hence established organisations are focused on meeting their existing markets' needs and they fail to adopt radically new technology that could appeal to different customers (Christensen 1997; Christensen and Raynor 2003).

Since existing processes can only support current tasks and at best evolutionary innovation or what is termed 'sustaining innovation', Christensen and Overdorf suggest that organisations need to create new processes and capabilities through new organisational space. This new organisational space could take the form of a new organisational structure, making a spin out organisation to perform the new tasks or acquiring an organisation whose processes closely match the requirements of the new task (Christensen and Overdorf 2000; Dyer et al. 2013).

Christensen and colleagues (1997 and 2013) define established firms as those that are established in the industry before the advent of the technology in question and who are using the legacy technology. From this perspective, entrant firms are those who are new to the industry at that point of technology change. Hence, a given firm would be considered as an entrant at one specific point in the industry's history but could be considered an established firm when technologies that emerged subsequent to the firm's entry themselves become subject to examination (Christensen et al. 2013).

## **2.2 Digital Innovation**

IT innovation research has been traditionally focused on describing and explaining changes in the volume of technological and organizational change associated with IT innovation (Lyytinen and Rose 2003b). In their extensive review of IT innovation literature, Lyytinen and Rose (2003b, p. 558) show that the little research that has been done in understanding the nature of differences or "differences in kind" has been "narrow in scope and limited to description of changes as either fashions (Newell et al. 2000) or imitations (Loh and Venkatraman 1990)".

However research on different aspects of Internet-based or digital computing suggest that it brings waves of innovation not only in systems' development approaches (Baskerville and Pries-Heje 2004) but also in IT-based business models and services (Alter et al. 2001; Eaton et al. 2015; Srivastava and Shainesh 2015). Authors recognize that "IT innovation theory needs to be expanded to analyze IT innovations in kind that exhibit atypical discontinuities in IT innovation behavior" (Lyytinen and Rose 2003b). However, the IT disruption model conceptualises the disruption of digital innovation from the internal view of the firm (Lyytinen and Rose 2003a) unlike the market impact of the innovation as in Christensen's disruptive innovation model.

Yoo et al. (2010) explain the unique characteristics of digital innovation as revolving around its reprogrammability, homogenization of data, and the self-referential nature of digital technology (Yoo et al. 2010). It is not clear whether all types of digital innovation share the same characteristics and what are the relationship between these characteristics and the disruptive impact for some digital innovations. To understand this, it is important to understand the specificity of the digital innovation under examination and how these specific characteristics contribute (or not) to its disruptive nature. In this

regard, this research aims to understand the disruptive nature of the digital innovation of the car sharing services Uber. It questions how and why this digital innovation comes to have (or not) a disruptive effect.

### **3 Research methodology**

This study adopts a qualitative case study approach. It considers the case of Uber launch in different countries to have access to different types of responses to the introduction of Uber as a new innovation. Data collection comprises of news items, public statements, review of websites, Apps, petitions, legal statements and court suites and other documents. In addition to secondary data collection, semi-structured interviews with Uber drivers and management, mainstream taxi drivers and management, Uber's other competitors, union representatives, and authorities is underway. Fourteen face-to-face interviews have been conducted in London and Manchester. Interviews were conducted between November 2015 and June 2016 while secondary data collection covers the period from Uber's formation in 2010 till July 2016. As interviews took place in the middle of heated debate, tape recording was found to be discouraging to interviewee. Instead, notes were taken during the interview and extended directly after each interview with the addition of observational notes. In addition, notes regarding key sources that need to be investigated were also prepared after each interview as interviewees showed good awareness of competitors and challenges and encouraged researchers to validate information and read further about particular developments, incidents, an emerging competitor, newly launched apps, trade union blogs among others.

Data analysis follows the inductive tradition. Following the inductive tradition, empirical data, theoretical lens and the relevant literature were visited in a recursive way. We followed analytical induction based on Goetz and LeCompte (1981). Based on this perspective, analytical induction consists of four stages: (1) defining phenomenon in a tentative manner, (2) scanning data to identify categories, (3) developing typologies, (4) determining the relationships that exist among categories, and (5) continually refining categories until all are accounted for (Goetz and LeCompte 1981). In this regard, the first phase of data analysis comprised the writing of the narrative of Uber's history collecting and reading different types of documents to understand the chronological developments and verify information. In the second phase, broad categories were identified. In the third phase, as our understanding of the case study and its details developed, we engaged with the literature on disruptive innovation. The literature provided us with a sensitizing device for developing typologies and based on constant comparison between the data and the literature, we identified relationships between categories. These categories and their relationships were continually refined based on recursive reading of case study and literature.

### **4 Case study**

Uber is a transportation networking company (TNC) based in San Francisco. The company was founded in March 2009 by entrepreneurs Travis Kalanick and Garrett Camp and officially launched in June 2010. It acts as a third party contractor that connects customers and taxi drivers. The company's services are provided through a free App that can be downloaded on any smartphone. It operates in collaboration with both Google maps and PayPal to provide customers a cheap way to hail and pay for taxis from their mobile phones. The customer can access information such as the whereabouts of the nearest taxi, the name and rating of the driver and also track the route of the journey while in the taxi. Customers also negotiate and pay for the service electronically. The App allows customers to request a taxi within a short period of time (usually 2-5 minutes) and set a meeting point with the taxi.

When demand for rides is higher than the supply of cars, surge pricing occurs, thus increasing the price. If the customer still wants a ride, the Uber driver shows the surge multiplier and asks the passenger's consent to that higher price. This has two effects: People who wait for a ride, decide to wait till price falls. Drivers who are nearby go to that location to get higher fees, bring the number of people wanting a ride and number of available drivers together.

After every Uber ride customers are rated by their Uber drivers, the same way the customers rate the Uber drivers. When a driver's or customer's Uber rating drops too far, they struggle to get rides or can even be excluded from the service entirely.

Uber has expanded rapidly with the development of mobile technology. It is currently operating in approximately 270 cities worldwide. In a short period, the company has risen in popularity and currently hold a market value of approximately \$40 billion, "making it the world's most highly valued venture capital-backed start-up" (Picy and Abboud 2015). The company investors include Mutual Fund Managers, Venture Investors, Fidelity Investment, Wellington Management, Summit Partners, Kleiner Perkins and Google Ventures. The following sub-sections describe the market challenges Uber faces.

## 5 Findings

### 5.1 International protests and social movements

While rising in popularity, the company is facing backlash in many of the countries and cities it operates within. This resistance is coming mainly from the taxi industry and trade unions. Below are some examples of the backlash and resistance the company faces in different countries.

*In Australia*, as reported in The Guardian on 10 September 2015, taxi drivers have staged rallies in Melbourne and Sydney and gathered outside the parliaments demanding state governments to outlaw the ride-sharing service UberX. They chanted and carried signs "Shame on Uber", "Stop illegal Uber" and "... taxi families and hire cars want justice" and also demanded the state transport minister to resign.

In a newspaper interviews, Taxi driver 1 said "We don't want [Uber] regulated, we want them out," Another warned: "If the minister won't stop Uber, then we will stop Uber. If he doesn't have the balls, we have the balls." Another demonstrator said "All the drivers as acknowledged by Roads and Maritime to be driving illegal, and Uber, through their App, are aiding and abetting them to drive illegally,". Another driver, said "There's not a level playing field. The taxi industry has a lot of fees to comply with the regulatory environment, and Uber has cut a lot of those costs."(Safi 2015).

*In Hong Kong*, More than 100 taxis drove to the headquarters of the Hong Kong government protesting against Uber. They called for regulation to ensure that people offering rides through the Apps had taxi licence. "We are protesting against Uber drivers who are affecting our income," a taxi driver who participated in the protests said to a new paper reporter (Soo and Feng 2015). Other protesters are reported to have said: "They don't have the proper licence to operate," and "If the government doesn't take action, we will keep on protesting".

*In France*, Violent protests by taxi drivers were abruped in July 2015 and led to holding in detention two of Uber's French executives by prosecutors.

*In Cambridge, Massachusetts* in the US, taxi drivers held a strike to protest against Uber. However, the reaction from Cambridge officials was expressed by the City Councilor "You guys realize the con-

stituency that supports Uber is the majority and you're the minority, right?" ... "The state is about to make Uber legal — it's about to make it fully legal, OK? And you guys are about to be in an even worse position." (Adam and Newsham 2015).

## **5.2 Legal actions**

Courts in France, Italy, Spain, Germany and China have cited UberPOP as illegal firm that does not conform with local transportation regulations and hence they have banned its operations. Further legal challenges are pending in the UK, Netherlands and Belgium. In France, the Constitutional Court upheld a national law that banned one of Uber Technologies' car services that relies on non-professional drivers using their own vehicles which, of course, is its main business model.

In *London*, Transport for London (TfL) have launched consultation plans that propose to include an interval of at least 5 minutes between ordering a car and the start of a journey, requirement for drivers to pass an English language test and a map reading test. In addition, they also suggest to oblige taxi firms to operate a landline telephone service, with bookings made up to 7 days in advance. This consultation plan came after Uber won its legal case in a London Court which stated that its App does not work as a taxi meter, effectively upholding the right of its drivers to work in London.

In *China*, a law was enacted that bans private cars from offering rides via Apps. Uber offices in Chengdu and Guangzhou were raided in April 2015 by the authority in their attempts to enforce the law.

In *New York*, the Taxi and Limousine Commission (TLC) approved in January a pilot project that allow cars no older than two years to become part of the city's taxi fleet, reversing a nearly 20-year-old TLC requirement that only new cars be added. Following this new regulations, Uber drivers are transforming their black cars into traditional New York yellow taxis. In doing so, once painted in yellow and joining the programme, previous Uber drivers can move to operate mainstream taxis operations. For example, they can use taxi stands in the city, taxi ranks at airport terminals, pick up street hails and get tips. The TLC Commissioner said "If this pilot helps even a few drivers make a career decision that they otherwise wouldn't have had the flexibility to make, then it will have been a success." (Harshbarger 2015).

## **5.3 Development of Competitive Apps**

We found that the market growth and profitability of Uber has attracted some new market entrants. The three biggest in the US are: Lyst, Side car, Curb.

**Lyft:** Launched in 2012 in San Francisco. Like Uber, it uses a smart App where users can see a map with a pin at their location; it gives an estimate of how far the nearest lyft car is, with a button labelled 'request lyft'. Unlike Uber which is available in 58 countries, Lyft is only available in United States.

**Side car:** Launched in 2012 in San Francisco, it has an App, with a map that marks your location and lets you know where the nearest Side car is. Its advantage over Uber is that passengers get to choose the car and the driver they desire. The App has lists of rides, photos of drivers and their cars, and fares charged. Although, just like Lyft, it is only available in United States.

**Curb:** Founded in 2014, It is a company that connects people to safe reliable rides from fully licensed drivers. Like Uber, it is App based, with a map that marks your location and let you know how far the nearest Curb driver is. Rides can be booked either instantly or 24 hours in advance. Fares can be paid in the App with a credit card.

In China, its Chinese competitors Didi Dache and Kuaidi Dache have merged in February 2015 to form Didi Chuxing. Didi and Lyft Inc. formed an international partnership which allows users of each



App to hail rides from drivers of the other App when travelling to the other country with Didi investing \$100 million in Lyft (Solomon 2016b). Payment is collected in the passenger's native country to avoid the hassle of paying in foreign currency. For example, a Chinese member visiting the United States can use the Didi App to order and pay for Lyft rides, after which Didi will remit that money to Lyft. In May 2016, Apple as a large corporation has announced its investment of \$1 billion in Didi Chuxing (Clover and Thompson 2016).

In the UK, Kabbee: An App available for IOS and android users offers booking mini cabs in London, with an option to choose price, arrival time, punctuality and user rating. Another App is Get taxi: available in IOS and android devices, it allows you to get a black cab in 2 clicks, with an option to pay within the App, if you are cash strapped, It is time tracking, locates your destination and lets you know how far the nearest taxi is. This is in addition to Hailo App which is available on both android and IOS devices, which allows you to hail black cabs on your phone. Like Uber, it locates where you are on the map and gives you a estimate of how long you will take for a taxi to arrive. Flywheel: currently used by taxi companies. It is an App which allows users to order taxis on demand. Though not as fancy as Uber Cab, nor cheap like Uber X, it never experiences surge pricing.

#### **5.4 Uber is disrupted**

As a result of the setbacks in Europe, Uber has begun to concentrate its efforts in Europe on the more traditional car and driver services, which are staffed by professional drivers and are usually covered by national laws on taxi operators. Thomas Meister, a spokesman for Uber, said the laws governing transportation services in much of Western Europe dated back to the 1960s and were less flexible than in places that have updated theirs such as the United States or Mexico and asserted that "It's inevitable that ride-sharing and car-pooling services will become more common in Europe, but it is just going to take longer than elsewhere," he said before the court's pronouncement (Picy and Abboud 2015).

To address the market criticisms, Uber's operation and product has passed through a series of improvements. These include making background check on drivers, requiring a commercial driving license for their drivers in some cities, improve features of the App including GPS tracking, sending to customer after booking, the driver's name, picture and car registration number and also making use of market mechanisms of self-correction through customer's evaluation/rating of drivers, .

Also Uber is losing \$1 billion a year as it tries to compete in China (The Guardian 2016). Its CEO, Travis Kalanick, has admitted in February 2016 "We're profitable in the USA, but we're losing over \$1bn a year in China. We have a fierce competitor that's unprofitable in every city they exist in, but they're buying up market share. I wish the world wasn't that way. I prefer building rather than fundraising. But if I don't participate in the fundraising bonanza, I'll get squeezed out by others buying market share." (Narvey 2016). Apple's investment in Uber's main competitor in China alongside the Lyft active international alliances programme with India's Ola, Singapore's Grab and China's Didi formed what the press has called 'anti-uber alliance' is forecasted to increase Uber's losses in international markets the future (Carson 2016; Ramli 2016). While Uber's customer base is expanding very fast, its net operations are showing serious growth in losses. According to a leaked confidential documents issued by the company to potential investors as part of its financing effort, its losses in the first half of 2015 is nearly 50% more than its entire year losses in 2014 (Efrati 2016). Overall, the data in these documents show that Uber's business remains unprofitable. "GAAP losses (net revenue minus cost of revenue, operating expenses and other costs) totaled \$671.4 million in 2014. Those losses expanded to \$987.2 million in the first half of 2015." (Solomon 2016a).

## **5.5 Uber is fighting back through Lobbying and legal actions**

In response to the ban in France an Uber spokesperson said, "While this is a disappointing judgment for Uber ... it will not impact the service we offer in France today which is provided entirely by professional drivers ... We will continue to work with the French government on new, commonsense regulations that offer riders more affordable, reliable options and drivers new job opportunities." Uber has also tried to take the legal battle to the European Headquarter in Brussels by challenging the national laws and lobbying for more favorable treatment (Picy and Abboud 2015).

In response to relaxing the regulations in New York to allow Uber drivers to transfer to mainstream New York Taxi, Uber said over a hundred yellow-cab drivers join it every week and earn more money. The App gives more flexibility than garages that offer their drivers 12-hour shifts. (Harshbarger 2015). In addition, Uber has also spent millions of dollars on Lobbying activities (Kokalitcheva 2015b) and has "built one of the largest and most successful lobbying forces ...at least a third more than Wal-Mart Stores" (Fox 2015). It consistently leverages Facebook's News Feed and its App to solicit users and drivers to "take political action on their behalf" in order to defend its controversial business model (Stempeck 2015).

## **5.6 Uber patent Protection**

Since 2013, Uber has filled many patents applications to the US patent office (Patents Docs 2015). In November 2015, it has eight pending applications and has received seven rejections with one Notice of Allowance (Lee 2015).

# **6 Discussion**

The case study presents the case of Uber and how the market reacted to its product and operation. It shows that rather than having a market penetration attracting the customers who are seeking a simple and cheaper product then gradually improving its product to eventually become the main stream product thereby removing the incumbents from their dominating position as the disruptive model of innovation states. Uber has faced fierce competition, protests, lawsuits and legal challenges. In the face of the competition, Uber is incurring significant net losses per year. Although its product is going through improvements, it was pushed by the competition, by negative campaigns and by legal rulings to change some of its product and operations features to resemble the mainstream incumbents. The following sections discuss Uber's business model and product.

## **6.1 Disruptive digital business model**

Uber's business model and App exhibit characteristics of disruptive innovation and disruptive technology respectively. It provides a cheaper and simpler taxi service which is consistent with the characteristics of disruptive innovation as providing convenience and affordability to customers (Hwang and Christensen 2008). The company's business model is distinct when compared to the mainstream model of trained and recruited taxi drivers, with a formal knowledge-base, regulated calculated fees, and formal license. It also departs from a model where a taxi service is bookable-in-advance, available on dedicated taxi ranks on the streets or could be spontaneously stopped in the street. Instead the business model of Uber is based on providing a cheaper more convenient service that could be booked instantly and is based on a "value network" where supplier-customer relationships between the members of the network exist through the mediating service of Uber (Stabell and Fjeldstad 1998). However, for Uber, all members of the network are customers .

## **6.2 Digital is imitable**

Christensen's model of disruptive innovation was based on manufacturing where changing production lines present a major investment. Hence, decision making is slow and incumbents tend to be reluctant to change their business model while the disruptor takes over the market and change the industry (Christensen 2013; Christensen and Overdorf 2000). The case study shows that Uber's innovation and business model is based on the development and operation of a mobile App. The low cost development of an App presents a low barrier to the market's entry (Stabell and Fjeldstad 1998). As the Uber App is easy to imitate, it does not present a strong technology or product differentiation (Porter 1985). This invited other new companies to enter the market and offer similar services. The new entrants to the market are competing fiercely with Uber causing, in part, the latter to incur net losses.

## **6.3 The market impact of disruptive digital innovation**

The case study shows that the market impact of the digital disruptive model of Uber is different from the traditional disruptive model of innovation. Unlike the typical expected reaction from incumbents in the traditional disruptive innovation models, the case of Uber shows that the current incumbents are strongly resisting the proliferation of Uber. The incumbents developed their own Apps to digitally compete with Uber. The low-cost of developing and operating an App make encourage incumbents to take decision to develop their own Apps in addition to their mainstream operations and compete with the disruptor. The high-speed of developing Apps, wide penetration of mobile phone across populations and the existing digital literacy regarding using mobile Apps made it possible for incumbents to digitally cope faster than the traditional model of disruptive innovation suggests.

In addition, Social actions and public protests against Uber's operations were also seen in many cities around the world with trade unions and incumbents lobbying and seeking legal actions to ban Uber's operations. The disruptive of innovation model overlooks the actions of the disrupted. However, the uses of social media and mobile phones have accelerated social mobilisations and public movements. Street protests, legal actions and court rulings has put significant pressure on Uber manifested by its financial losses.

## **6.4 The digital competition**

While Uber is facing serious competition, protests and court rulings, it is also fighting back. It is also heavily lobbying in local governments and consumer groups (Palmer 2013) and in the US is considered "the largest lobbying forces in the country" with 250 lobbyists and 29 lobbying firms registered in capitols around the US (Fox 2015; Kokalitcheva 2015a; Kosoff 2014). Uber is also trying to protect its App by applying for patent protection for features of its App. However, it has not been successful in getting patent protection.

Uber also contracted and resided to traditional business models in markets that banned its App and car sharing operations. In markets, like New York, when the regulator adopted a positive stance allowing Uber's taxi drivers to convert to mainstream taxi operations, Uber continues to Lobby in attempt to create an image that while drivers leave Uber, more join everyday.

While Uber is making financial net losses, the company was recently valued at \$50 billion and is considered the most funded start-up in the world (BBC News 2015). This presents a digital innovation dilemma that while the customer base of the company is growing rapidly, the nature of the digital innovation – as explained above - drives the cost of competition to grow even higher.

## **6.5 Beyond the initial disruption: co-evolution of digital innovation**

Following our inductive approach, we propose that disruption in digital innovation follows a co-evolution trajectory where the disruptor business and the disrupted business co-evolve over time. During this co-evolution process, both parties go through changes in their business models and adoption of technology. Following this co-evolution processes, none of the competitors diminish but they continue to co-exist and co-evolve creating a complex competitive and rapidly changing environment. App development is characterized by low cost of entry, high speed of App development, proliferation of mobile technology across populations and high technology literacy. Together these characteristics create a low barrier to enter the market that encourages competitors to quickly catch up with the disruptor. In addition, the widespread use of social media is empowering the disrupted groups to better communicate, organize and move to interfere and rise up against the disrupted organization. Digital innovation based on App development and mobile technology does not make dramatic and complete disruption as presented in the ‘disruptive innovation’ literature and make this model difficult to be materialized.

To sum, the rise of Uber is disrupted by networks in most European countries and cities. They followed a similar trajectory of strikes, legal actions and the initiation of competing App services. This contradicts the traditional disruptive innovation model that expects incumbents to be fixated on their traditional markets and products and late in adopting the disruptive technology. However, the adoption and development of the described type of digital innovation (Apps) seems to be taking place faster allowing the emergence of different types of competition and imitations. Also, the openness of Apps and the existence of different types of digital communication seems to allow different networks to converge and oppose any possible domination of disruptive business model. This is a research in-progress paper where data collection effort has just started.

## **7 Conclusion**

The digital innovation market is more fluid than the manufacturing market. The entry has low cost and high speed, which encourages an incumbent’s decision makers to move faster and at a lower cost. Due to fierce legal and other objections and competition, the operating cost of the disruptive company has increased significantly causing it to operate at a financial loss despite the increase in its customer base. The business model based on an App is vulnerable to imitation where both incumbents and new entrants develop similar Apps. The incumbents use the App in parallel with their mainstream operations as they benefit from the already available capability of mobile phone availability and popularity among their drivers and the drivers competency of using it. New entrants are adopting a similar business model to Uber while moving faster to create international alliances. This is in contrast to the striking corporate stories of the traditional model of disruptive innovation where new entrants appeal to low-end customer base and gradually take over the market creating a new model for the industry that incumbents cannot cope with. Also having an increased consumer base contributed to the high market valuation of the Uber in contrast to its growing loss making which raises questions regarding

who benefits from the digital disruptions and the digital economy. Clearly, ore research is needed to examine the nature of the digital innovation, the digital market conditions and the nature of digital competition.

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