

Sharing economy—disrupting established industries

A case study of Airbnb disrupting the hotel industry

Bachelor's Thesis



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Abstract

With the rise of technology, the sharing economy and its supportive businesses are also on the rise. Sharing economy businesses have been depicted as disruptive innovations for established industries. This matter is studied by trying to answer the research question: *Is Airbnb disrupting the hotel industry, and what is the response of the hotel industry?* This disruption is found to be partially true and responses of the industry are described. From this research, better insight is provided into the relation of disruption and response from incumbents, specifically for the case of Airbnb's impact on the hotel industry. Method of analysis is a case study wherein five characteristics of disruptive innovation are presented and it is measured if Airbnb corresponds with these. Industry response is mapped into three major response strategies on disruptive innovation. The findings of this research suggest that Airbnb is a disruptive innovation for the lower and mid segments of the hotel industry, but disruption is not occurring in the higher segment. From industry response, it is clear that incumbents have only recently begun to perceive Airbnb as a threat and respond to it. Further research may involve more specific economic measures to analyse the influence of the economic crisis and also cultural values may be taken into account in the process of disruption.

Keywords:

Disruptive innovation, Airbnb, disruptive response strategies, hotel industry, sharing economy

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1. Introduction

The 'sharing economy' has brought the world a new type of economy. Sharing has existed for a long time already and is considered the most universal form of human economic behaviour (Price, 1975). The meaning of sharing has changed by the perspective that information is something to be owned, bought and sold, and it has led us into a new era of sharing that has quickly been embraced by millions (Belk, 2010), in industries as diverse as the automobile industry, the taxi industry, and the hospitality industry (Frenken & Schor, 2017). With the development of technology that supports peer-to-peer collaboration, which makes it easier for strangers to connect with each other and increases incentives for people to participate in sharing practices, the popularity of the sharing economy and its supportive businesses have increased tremendously (Ranchordás, 2015). The definition of the sharing economy used in this research is the one provided by Frenken, Meelen, Arets, and Van de Glind (2015, p. 4): 'consumers granting each other temporary access to underutilised physical assets (idle capacity), possibly for money'.

The development of technology and the rapid rise of the sharing economy may also bring along several new issues. Consensus is growing that the sharing economy cannot be left unregulated but also cannot be regulated by traditional command-and-control approaches (Codagnone, Biagi, & Abadie, 2016). Governments have to face the regulatory issues emanating with the rise of the sharing economy. Speculations have arisen that sharing economy business models will threaten incumbents across the economy (Ascher, 2015). Therefore according to Cusumano (2015, p. 32) the big question is: 'how should traditional companies deal with start-ups in the sharing economy'?

One of the most successful businesses in the sharing economy is the online home-sharing platform Airbnb (Frenken & Schor, 2017). Airbnb has grown from a start-up firm to a multi-billion dollar international platform within five years (Konrad & Mac, 2014). Airbnb states on their website that over three million accommodations are listed on their platform worldwide (Airbnb, 2017 a). Fraiberger and Sundararajan (2015) remarked that, over the summer of 2014, hosts were accommodating over 375,000 guests per night, making Airbnb comparable in inventory and transaction volume to the world's largest hotel chains. The largest hotel chains have fewer rooms, much slower growth rates and often much lower market valuations compared to Airbnb (Salvioni, 2016). Considering the growth, market value, and size of Airbnb, one might think Airbnb could have negative impacts on the market share of the established hotels in the industry.

Research by Zervas, Proserpio, and Byers (2014) has shown that Airbnb can have revenue impacts on the traditional hotel industry. On top of the economic impacts that Airbnb could have on the hotel industry, the firm has been depicted as a disruptive innovation that is bringing significant change to the hotel industry (Denning, 2015). The concept of disruptive innovation, popularised by Christensen (1997), describes the process of an innovation introduced in the low end of a market that eventually competes with the traditional offerings. Disruption occurs when mainstream customers in the market adopt the disruptive innovation in volume. Christensen described Airbnb as a classic case of disruptive innovation (Denning, 2015), while Guttentag and Smith (2017)

found that Airbnb is currently not fully disruptive to the hotel industry. This disruption is the focus of the research.

Research on disruption has been done on the supply side of accommodation, where the offerings of Airbnb and the hotel industry have been compared (Zervas et al., 2014; Choi, Jung, Ryu, Kim, & Yoon, 2015; Forgács & Dimanche, 2016). Also, the demand side has been studied (i.e. what consumers think of the rise of Airbnb and if they would judge it as a substitute for traditional accommodations) (Gutentag & Smith, 2017; Ikkalla & Lampinen, 2015). However, previous research 'did not assess the disruptive process comprehensively (e.g. the response from existing firms)' (Guttentag & Smith, 2017, p. 9). Considering the disruptive process of Airbnb on the hotel industry, two points of focus remain unclear: 1. Is Airbnb a disruptive innovation or not? 2. What is the industry response to the disruptive process? Guttentag and Smith (2017) concluded that more research on in this field has to be done.

These points of focus are two factors that are related to each other. When disruption in an industry is occurring, incumbent firms need to respond to the disruption (Christensen, Raynor, & McDonald, 2015). When analysing the response of the hotel industry, it is important to consider that the industry response will be greater if the innovation is shown to be disruptive. On the other hand, an innovation is more likely to be disruptive if there is lack of response from the industry. Therefore, these points of focus are intertwined with each other, and one cannot be separated from the other.

The aim of this paper is to contribute to a comprehensive image of the disruptive process of Airbnb in the hotel industry. This is done in a case study by analysing five disruptive characteristics of Airbnb for the hotel industry and by focusing on the response of existing firms in the hotel industry. The five characteristics focus on values of hotel customers, the attributes of Airbnb, pricing, adoption rate, and improvement of the innovation. Response of incumbents in the hotel industry is analysed and categorized in three major response strategies: 1. Join Them, 2. Beat them, 3. Wait them out. These theories will be used to answer the research question:

Is Airbnb disrupting the hotel industry, and what is the response of the hotel industry?

The outcome of this research provide a better understanding for hotels or hotel chains in the industry to determine whether or not they will be affected by this potential disruption. Establishing whether Airbnb is a disruptive innovation or not gives a clearer incentive for hotels to react or not. Also, the documented and suggested responses stated in this research serve as a source of information for management in the hotel industry. The response of a particular hotel or hotel chain may be an example for other hotels or hotel chains to anticipate on. Also, a comprehensive understanding of the disruption can result in a better understanding for policymakers of how to face regulatory issues concerning the sharing economy.

Part of the scientific relevance of this research is its contribution to the research agenda of the substantiation of Airbnb as a disruptive innovation. Also as Airbnb is a part of the sharing economy this case study can serve as a base for in-depth research in the relation between the sharing economy an disruptive innovations. The analysis of Airbnb as a disruptive innovation can be used in strengthening the theory of disruptive innovation in

making ex ante predictions, as ex post documentation of the firms involved in the disruption process can be of use utilised (Govindarajan & Kopalle, 2006).

In the theory section below, the terms, concepts and theory used in this research are elaborated on. The following methodology section provides the structure and operationalisation of the research. Subsequently, the results section gives an insight into the current responses in the industry. After this, the discussion consists of an analysis of the insights and critical notes on the conducted research. Finally, the research question is answered in the conclusion.

2. Theory

This section provides a clear definition of all theory used in the study.

2.1. Disruptive innovation

The theory of disruptive innovation experienced a big lift in 1997 when the theory was popularised in the book *The Innovator's Dilemma* (Govindarajan & Kopalle, 2006). The advancement in the disruptive innovation theory by Christensen had a significant impact on management practices and made him renowned in the study of technological innovation in commercial enterprises (Yu & Hang, 2010). Unfortunately, wide adoption and use of the theory have led to misuse of the theory's basic tenets and a misunderstanding of the theory's core concepts (Christensen et al., 2015). The term 'disruptive innovation' is often applied to describe any situation where an industry is affected and the incumbents are having trouble. The term 'disruptive innovation' is often misapplied where terms as 'radical' or 'discontinuous' are better applicable (Christensen et al., 2015; Christensen, 1997). The terms 'radical' or 'discontinuous' innovation imply a significant level of 'newness', whereas the term 'disruptive innovation' implies a new value proposition.

2.1.1. Disruptive innovation process

Figure 1 portrays the disruptive innovation process. The red lines depict the two different processes of the incumbent's sustaining trajectory and the entrant's disruptive trajectory. In Christensen et al. (2015), disruption is described as a process whereby a smaller company with fewer resources is able to successfully challenge established incumbent businesses. The incumbents focus on their most demanding consumers (usually also the most profitable) by concentrating on improvement of their products and services—sustainable innovation (Christensen, 1997). Hereby, they overshoot the needs of some (lower) segments and neglect the needs of others. New entrants aim exactly at these overlooked segments of consumers by gaining a foothold through producing a product or service that has a better fitting functionality for this segment and often a lower price.

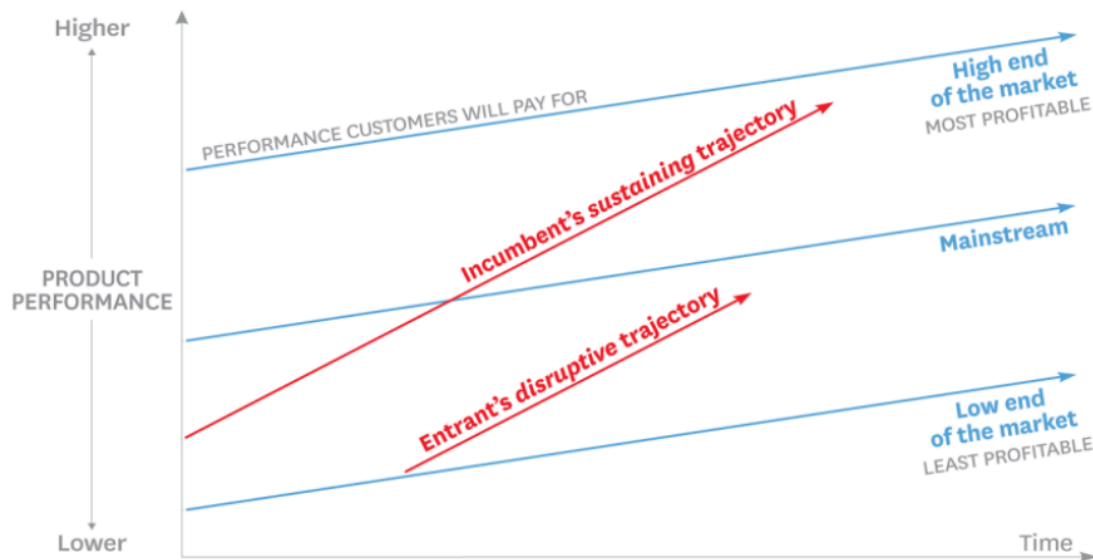


Figure 1: Disruptive innovation trajectory (Christensen et al., 2015).

Incumbents aiming for higher profitability in the upper segment tend to underestimate the threat. Eventually, entrants move up the market, improve their product and start to deliver the performance that the mainstream customer of the incumbent needs. The innovation of the entrant still has the initial advantage that made it successful. The final stage of disruption is achieved when the innovation of the disrupter is adopted by mainstream customers in large volume (Christensen et al., 2015). Incumbents tend not to respond vigorously to a potential disrupter, which lets entrants move up the market and compete with the incumbents (Christensen, 1997; Christensen et al., 2015).

This research amplifies the fact that disruptive innovation is a process in which the innovation can be in different stages. For an innovation to be fully disruptive, all the stages have to be completed. In this sense, researchers can analyse at what stage an innovation is in the process of becoming fully disruptive. The different stages are described by different characteristics, as presented below.

2.1.2. Disruptive innovation characteristics

A more systematic approach of analysing all the characteristics is conducted in this research. The following characteristics found in the literature define what stage of the disruptive process an innovation is in and thus whether an innovation is disruptive or not. To analyse whether Airbnb is a disruptive innovation or not, these characteristics serve as the criteria. If Airbnb meets all the criteria, the platform is fully a disruptive innovation. When an innovation does not comply with one of the characteristics, it cannot fully be defined as a disruptive innovation.

The five characteristics described by Abernathy and Clark (1985), Adner (2002), Charitou and Markides (2003), Markides (2006), Christensen (1997), Christensen and Bower (1996), Christensen and Raynor (2003), Gilbert (2003), and Govindarajan and Kopalle (2006) are as follows:

- 1) The innovation underachieves on the attributes valued by mainstream customers.

- 2) The mainstream customer does not value the new features put forth by the innovation.
- 3) The innovation offers lower prices than available offerings, and it is cheaper to produce and more simple.
- 4) Initially, the innovation appeals to low-end customers who find a lower price important, which limits the profit potential and therefore limits the incentive for incumbents to react.
- 5) The innovation improves and starts to perform better in terms of the attributes valued by mainstream customers, which drives a rising number of mainstream customers to adopt the innovation.

2.2. Response strategies to disruptive innovation

Most incumbents in an industry have the ability to respond but do not have the incentive to respond (Henderson & Clark, 1990). Christensen and Raynor (2003) argued that incumbent firms oftentimes fail to recognise the threat induced by a disruptive innovation. This led Schmidt and Druel (2008) to contend that, when incumbents are ‘overthrown’, this is generally by disruptive innovation, thus making it critically important for managers to be able to recognise a disruptive innovation.

To recognise whether an innovation is disruptive or not, one must know the characteristics, as depicted above. However, even if all the characteristics can be recognised, it is still difficult for incumbents to respond to potential disruption because there is uncertainty about which product or service might eventually form serious competition when a company tries to enter a market (Gans, 2016). Adapting to or competing with disruption that is not yet occurring is therefore almost impossible. When it is occurring, incumbents cannot wait too long to respond for ‘entrants may become too strong to beat or too expensive to acquire’ (Gans, 2016, p. 88). In this study, the responses analysed in the hotel industry will be separated into three categories, as proposed by Gans (2016): 1. Beat them; 2. Join them; 3. Wait them out.

2.2.1. Beat them

Instead of sustaining the current product or service, the incumbent can respond by doing the opposite—investing in the new entrant’s innovation. This strategy, advocated by Foster (1986), former director of McKinsey & Company, proposes collecting and deploying resources and aggressively investing in the innovation in order to take control of the market. In the 1990’s Microsoft Corporation fended off a disruptive innovation of Netscape Navigator in the ‘browser wars’ by heavily investing in a new division to outperform the disruptor’s innovation (Bresnahan, Greenstein, & Henderson, 2012).

2.2.2. Join them

Acquisition

Disruption can be delayed or prevented with aggressive investment strategies or by acquisition of the disrupter (Gans, 2016). A way to achieve this is to buy new entrant’s business and its sets of products at the moment the potential disruptive innovation becomes a threat (Gans, 2016). Competing with the new entrant may result in financial

losses, and by acquisition, disruption can be avoided. In the hard disk drive market as described by Christensen, the market leader Seagate Technology faced competition from an innovative different sized disk of Connor Peripherals. Seagate Technology responded on this potential disruptive innovation by acquiring Connor Peripherals and its set of products (Gans, 2016).

Cooperation

Cooperating can have mutual benefits for both the disrupter and for the incumbent. Competing for a share of the market can be an expensive and time-consuming process (Gans & Stern, 2000). Disadvantages of this response strategy can be that incorporating the new entrant's innovation might cause issues of a technological nature and financial externalities (Gans, 2016). The potential disruptive innovation and the incumbent's technological trajectory might be very different and may result in high costs when integrating the new innovation (Gans, 2016).

When integration costs are too high, a possibility for the incumbent is to wait until the benefits of cooperation have improved and have become higher than the costs of integration. This delayed process of acquisition or cooperation mostly occurs with potential disruptive innovations that are initially less understood but turn out to be the most promising innovations (Marx & Hsu, 2015). In the process of waiting for the potential for disruptive innovation to improve, the costs for acquisition may be higher, but by implementing this strategy, costs are also saved on potential disruptions that do not turn out not to be disruptive (Gans, 2016). An example of this is Siri, the speech recognition based function of Apple that serves as a personal assistant. Initially, Siri was an app of Vlingo Corporation and was based on a different technology than competing apps. The technology was valued by to have a lower performance than its competitors. Vlingo Corporation showed their competitors wrong by developing an app and incorporating their technology. They competed with their other apps to show the capabilities of their software, which led to their cooperation with Apple (Gans, 2016).

2.2.3. Wait them out

In planning reactions, incumbents should also assess what assets or key elements in a value chain they possess that entrants lack; it would be rare that a new entrant outperforms an incumbent in all key elements of a value chain (Gans, 2016). Incumbent firms may maintain market leadership because they have invested in key value chain elements that are hard to copy (Gans, 2016). For this reason, incumbents may be able to afford to await the disruption and react on their own terms (Gans, 2016). An example of this is the disruption of the print industry in the 1950's. The industry underwent several dramatic technological changes: first there was the switch from photographic processes to xenon flash, after that there was the switch to cathode ray tubes, and finally there was a switch to laser typesetting in the 70's. However the firm Linotype that stayed with their core business of photographic processes remained important in the market because of on of their fonts that remained a key complementary asset to the industry (Gans, 2016). The disruptive innovations in the industry outperformed their initial product but still relied on fonts.

3. Methodology

The research in this paper was conducted as a case study analysis. A case study may be quantitative or qualitative; in this case, both types of data were evaluated. By selecting a single case study design, an intensive examination of the setting is possible, which provides a more in-depth elucidation of the case (Bryman, Social Research Methods, 2012). Specifically, a descriptive case study analysis was conducted. The known theory was applied to a specific case, and additional information was sought as to why and how the theory applies to the case (Yin R. K., 2009). This particular case study is for idiographic purposes, as the specifics and context of the case of Airbnb disrupting the hotel industry were analysed (Bryman, 2012). When findings can be generalised to other cases or theory, this may be attributed to nomothetic capacities of the research (Bryman, 2012). This was not the main objective of this study.

3.1. Data collection

Multiple sources of data were analysed for this case to strengthen the information presented (Yin R. , 2009). Herein, different journals, papers and articles were reviewed to determine how experience as well as existing theories and models may contribute to the research (Bryman, Social Research Methods, 2012). The focus of this research is on the impact of the disruptive process of Airbnb on the hotel industry, and specifically, the response of incumbents, as little research has been done on this aspect (Guttentag & Smith, 2017).

The literature on the subject was searched through Scopus and Google Scholar, and the available data was analysed. Data collection on the response of incumbents has formed an obstruction for the research because the process of disruption is currently in effect, which makes the availability of data limited. To find a sufficient amount of literature, grey literature (e.g. newspaper articles, reports, working papers, and scientific blogs) was also analysed through LexisNexis.

The most important search terms used in this paper are ‘hotel disruptive innovation response’, ‘disruptive innovation *’, ‘sharing economy*’, and ‘impacts *’, wherein * is filled in as the following terms, or a combination of these:

- ‘Airbnb’,
- ‘hotel sector’,
- ‘hotel industry’,
- ‘hotels’,
- ‘home sharing’, and
- ‘traditional accommodation’.

3.2. Theory interdependence

The orientation of the research is deductive, as theoretical concerns are at the base of the research question that guide the research design and the collection of data (Bryman,

2012). The theory of disruptive innovation is already known and was used as the construct for the research. The disruptive innovation theory, as elaborated by Christensen (1997) and the more recent corrections of the theory by Christensen et al. (2015) form the foundation of the theory used in this research. Theory on industry response is predominantly represented by disruptive response strategies discussed by Gans (2016). Additional theory in support or critique of the theory was added to form a framework for analysing the response of the hotel industry.

Characteristics from both theories depicted in the theory section show interrelations. Important for this analysis is to consider that the disruptive innovation process and the response of the industry are interdependent in two ways. First, when incumbents in the industry lack response, the innovation has a better chance of becoming disruptive. This also means that, when an industry does respond, an innovation has less chance of becoming disruptive.

Secondly, the industry tends to wait and delay response until the innovation has been shown to be disruptive. Therefore, determining where an innovation is in the process of becoming fully disruptive is important for the industry response. Also, observing what response to Airbnb already exists in the industry is important to determine if this will influence the disruptive process of Airbnb.

3.3. Operationalisation

Operationalisation of the disruptive innovation theory is under-researched, and the theory is predominantly used as a descriptive guideline (Raegan, 2014). Therefore the operationalisation has not provided quantifiable criteria with scores but was used as a guideline for analysis. To determine where Airbnb is in the disruptive innovation process, a review of the literature was used to determine if Airbnb complies with the identified characteristics. Indicators were added to the characteristics to see how Airbnb complied with these.

For analysis if Airbnb is a disruptive innovation for the hotel industry the characteristics of disruptive innovation were compared with the characteristics of Airbnb. The five characteristics describing disruptive innovation were used to analyse whether Airbnb complied with the characteristics indicators were added to every characteristic. In table 1 the five characteristics and its indicators as found in literature are presented.

	Indicators
1. Underachieving on attributes valued by mainstream customer of hotel industry	‘cleanliness’, ‘comfort’, ‘confidence quality would meet expectations’, ‘ease of placing reservation’, ‘ease of checking in/out’, ‘ease of resolving unexpected problems’, ‘security’

2. Attributes of Airbnb not valued by mainstream hotel customer	'local authenticity of the experience', 'uniqueness (non-standardisation) of the experience', 'user-friendliness', 'saving time', 'defeating distance', 'preferred locations', 'perception of control'.
3. Lower pricing of Airbnb	Average pricing per room
4. Appeal to low-end customer	Adoption rate of innovation by low-end customer Attributes valued by low-end customer
5. Valued by mainstream customer	Attributes Airbnb valuation by mainstream customers, performance on attributes valued by mainstream customer, adoption rate mainstream customer,

Table 1. Operationalisation disruptive innovation characteristics.

For mapping the different response of hotels and hotel chains to Airbnb, the theory of disruptive response strategies is operationalised in table 2. Also for this theory indicators are added to all three categories to analyse whether response in the industry complies with which category. To delimit the response that was mapped of the industry, specifically the top ten hotel groups was analysed. Also any outstanding hotels or hotel groups that seemed of importance were taken into account.

	Specified	Indicator
Beat them		Investments in Airbnb's innovation
Join them	Acquire	Hotel acquiring Airbnb's innovation
	Cooperate	Hotel and Airbnb cooperating
	Await improvement	Hotel signalling possible cooperation if Airbnb improves innovation
Wait them out	No response	Hotel signalling: no incentive to respond, possess key assets

Table 2. Operationalisation disruptive response strategies.

In this analysis, hostels were not analysed, as these do not fit in the scope of the hotel industry. The hotel industry may be divided in three different segments, ranging from lower to higher. The lower segment consists of budget hotels, the mid segment consists of mid-scale hotels, and the higher segment consists of high-end hotels (Guttentag & Smith, 2017; Nowak et al., 2015; Zervas et al., 2014). For management in the industry to relate to the data presented, STR, the industry's most important provider of hotel data present the chain scales as: lower segment (independents, economy chains, midscale chains), mid segment (upper midscale chains, upscale chains), and higher segment (upper upscale chains, luxury chains) (O'Neill & Mattila, 2006).

One of the terms used in the characteristics and in literature, ‘mainstream customer’, is defined as the customer at the periphery of a firm’s business (Govindarajan, Kopalle, & Danneels, 2011). Guttentag and Smith (2017) provide an insight in the typical user of Airbnb and their characteristics in substituting hotels with Airbnb. In table 3 an overview of the most common responses of the Airbnb users was made with the data provided. This data corresponds with research study by Nowak et al. (2015).

	Age	Financial status	Backpacking	Traveling with children	Times used Airbnb
Lower segment	≥41	Below average	Yes	No	≥6 times
Mid segment	31-40	Above/well above avg	No	Yes	1 time
Higher segment	31-40	Above/well above avg	No	Yes	4-5 times

Table 3. Most common response in survey of 817 Airbnb users, per segment of the hotel industry (Guttentag & Smith, 2017).

4. Results

4.1. Disruptive innovation

The threat of Airbnb on the hotel industry has been underestimated by the industry (Salvioni, 2016). It has been estimated that Airbnb could take \$900 million in disruption revenues in 2015 and that their global market share could rise from 1% to 10% in the following 10 years (Kaminska, 2015).

4.1.1. The five characteristics of disruptive innovation

1) **The innovation underachieves on the attributes valued by mainstream customers.**

At the start of Airbnb in 2007, the core business was different from the hotel industry as Airbnb started out as a platform supporting ‘airbed and breakfast’ services, hence the name Airbnb (Cusumano, 2015). Their service was targeted at people wanting a couch or an airbed to sleep on, and not a bed in a luxury hotel (Carson, 2016). This is also exemplified by the fact that the service of the platform commonly was compared with the free accommodation platform Couchsurfing (Jung, Yoon, Park, Lee, & Lee, 2016).

Airbnb is appointed to be a peer-to-peer marketplace that lacks protection for users offering and renting rooms, and undermines hygiene (Dredge & Gyimóthy, 2017). Airbnb has lack or underachievement on issues relating to trust, cleanliness, service quality, brand reputation, staff friendliness, and security (Zervas et al., 2014; Chu & Choi, 2000). In the start up phase of Airbnb the quality of photos for the homes were not professional which hampered bookings (Ellis, 2015). This may indicate that there was a lack of confidence that quality would meet expectations.

2) The mainstream customers do not value the new features put forth by the innovation.

The progress of the innovation of Airbnb was slow until 2009, when the firm received venture funding and business advice, and started improving their service (Cusumano, 2015). Specific values that Airbnb emphasise as 'blending in with the locals', 'uniqueness', 'local authenticity', 'adventure', and 'perception of control' (Forgács & Dimanche, 2016; Guttentag & Smith, 2017; Nowak, et al., 2015) are not explicitly found to be undervalued by the mainstream customers of the hotel industry

For these different segments of customers it is found that business travellers (higher segment customer) are less keen on using Airbnb than leisure travellers (Nowak, et al., 2015). It should be noted that the mainstream customer may be divided in three categories, matching the different segments of the hotel industry. From the most common responses can be extracted that that value of low pricing is commonly an important factor for consumers of the lower hotel segment. For the customers of the mid and higher segment no correspondence with the values initially put forth by Airbnb are found.

3) The innovation offers lower prices than available offerings, and it is cheaper to produce and more simple.

Nowak et al. (2015) show that price is the primary reason for use of Airbnb (55% of its users). The price of Airbnb is expected to be lower than the price of hotels in the higher segment, mid segment, and also in the lower segment (Guttentag & Smith, 2017). Airbnb's average price per room night is found to be lower than the hotel average (Nowak, et al., 2015).

The service of Airbnb is significantly cheaper to produce in comparison with the hotel industry for multiple reasons. Airbnb has no real estate costs, because users who rent out their home or apartment have already paid for the asset (Goodwin, 2015), so-called sunk costs. Also, intuitiveness and simplicity in the booking process of Airbnb is a major improvement in comparison with most hotels (Forgács & Dimanche, 2016).

4) Initially, the innovation appeals to low-end customers who find a lower price important, which limits the profit potential and therefore limits the incentive for incumbents to react.

Nowak et al. (2015) show that the major reasons why Airbnb is used come from price (55%), location (33%), and Authentic experience (31%). This is clearly coherent with the disruptive innovation characteristic of appealing to customers who find a lower price important.

5) The innovation improves and starts to perform better in terms of the attributes valued by mainstream customers, which drives a rising number of mainstream customers to adopt the innovation.

Guttentag and Smith (2017) have found that customers expected Airbnb to outperform the lower segment of the hotel industry on all attributes that Airbnb was initially found to underperform on. For the mid segment Airbnb was expected to outperform on all

attributes except for ‘ease of checking in/out, ‘ease of resolving unexpected problems’, and ‘security’ (Guttentag & Smith, 2017). For the higher segment hotel industry Airbnb was found to underperform on all attributes valued by mainstream customers (Guttentag & Smith, 2017). Nowak et al. (2015) present that 12% of travellers have used Airbnb at least once in 2015, and this number was believed to increase to 16% (business travellers) to 18% (leisure travellers) in 2016. This implies that not only an increase in adoption of the innovation of Airbnb will occur for the customers of the lower and mid segment, but also for the customers in the higher segment.

The innovation of Airbnb is found to be most adopted as a substitution for the mid segment (64,8%), then for the lower segment and least for the higher segment (Guttentag & Smith, 2017). Zervas et al. (2015) conclude that the impact of Airbnb on the hotel industry is unevenly distributed, with mainly the lower segment of hotels experiencing revenue impacts.

4.2. Industry response

Many hotel chains have started seeing Airbnb as a threat (Kelly, Billingsley, Warren, & Kramer, 2016) and authors are recognising the threats and warning incumbents to take a proactive approach (Salvioni, 2016). In the perspective of the hotel market, Airbnb is a threat to traditional tourism and hospitality businesses specifically lower priced hotels (Cheng, 2016). Zervas et al. (2014) conclude that for every additional 10% increase in the size of the Airbnb market the resulted decrease in hotel revenue is 2-3%.

In determining the industry response, specifically the top nine hotel groups in the world are considered. In the table 3, the nine largest hotel chains as of 2015 in the hotel industry are stated (Salvioni, 2016). Also their corresponding place in the chain scale (STR Global, 2017) and their response strategy as found in the results are added. For comparison it is relevant to note that Airbnb currently is found to have over 1.500.000 rooms (Airbnb, 2017 a).

	Hotels	Rooms	Segment - (chain scale)	Response strategy
1. Marriott-Starwood	5.324	1.048.498	Mid/high - (midscale/luxury)	Beat them
2. IHG	4.840	710.295	Mid/high - (midscale/upper upscale)	Beat them
3. Hilton Worldwide	4.278	708.268	Mid/high - (upscale/luxury)	Wait them out
4. Wyndham Hotel Group	7.645	660.826	Low/mid/high - (economy/upscale/upper upscale)	Beat them
5. Choice Hotels Int.	6.376	504.808	Low/mid - (economy/upscale)	Wait them out
6. Accor	3.717	482.296	Low/mid/high - (economy/upscale/luxury)	Beat them
7. Best Western	3.900	302.144	Low/mid - (economy/midscale)	Join them
8. Home Inns	2.609	296.075	Low - (economy)	<i>Unknown</i>
9. Jin Jiang (inc.	2.208	241.910	<i>Unknown</i>	Beat them

Louvre Hotels)				
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Table 3. Top nine hotel groups in the world and Airbnb (Salvioni, 2016; BI-Intelligence, 2016).

4.2.1. Beat them

Hotel chains have the opportunity to purchase their own branded marketplace similar to Airbnb and have the advantage of being backed by the hotel chain's brand, resources, knowledge and expertise (Brendan & Cleveland, 2016). Such offerings are pronounced to be able to relieve current service issues with reliability, consistency and quality as experienced by Airbnb. Comparable responses are implemented by large hotel chains, that are launching new establishments aiming on the core values of Airbnb users (Elliott, 2016 b).

Investments in competitors

AccorHotels has invested in Onefinestay, a home-sharing platform similar to Airbnb focusing on the high-end market (Glusac, 2016). Also Hyatt Hotels, of the higher segment of the industry, is reported to be among the group of investors partaking in the \$40m investment in Onefinestay (Ahmed & Moore, 2015). Wyndham Hotels have invested in a London-based start-up that is a subscription service called LoveHomeSwap, the investment is estimated to be \$11.8m (Ahmed & Moore, 2015). Marriott International and Starwood Hotels & Resorts have merged to get ahead of the threat that is posed by new digitally native entrants (BI-Intelligence, 2016).

Investment in innovation

Not only direct investment in competitors of Airbnb are noticed, but also investments in underlying information technology that the innovation builds on (Salvioni, 2016). As the innovation of Airbnb is based on peer-to-peer sharing platforms, other hotels and hotel chains may have to focus on certain capabilities. The IHG annual report of 2016 expresses recognising the importance of technology and digital commerce in transforming the consumer experience (Cescau, 2016). Intercontinental Hotel Group has cooperated with Stay.com (Debenham, 2016), a tailored tourist guide, but this service has now been shut down in May 2017 due to unknown reasons (Tech for Travel, 2017).

For the Chinese hotel group Jin Jiang there was no response on Airbnb to be found, although Airbnb has penetrated the Chinese accommodation industry and changed their name to Aibiyang for the Chinese market (Thomas, 2017). Part of Jin Jiang group is Louvre Hotels, which have noticeably invested in new information technology. Louvre Hotels have made steps to enhance the customer experience by implementing payments methods and digital check-in with the apps Wechat and Alipay (Jacobs, 2017).

Lobbying

A generally more uncommon response strategy that is not included in the disruptive response strategies presented in the theory section is lobbying. The hotel industry is lobbying for research into legal issues and negative externalities concerning Airbnb, to try and constrain Airbnb's market (Elliott, 2016 a). Former CEO of Marriott International, Arne Sorenson, claims that the industry needs a 'level playing field' (Ting, 2017). Insisting that the current form of competition is not based on equal regulations. When hotel chains have to pay large amount of taxes online platforms should do too.

4.2.2. Join them

Acquire

Airbnb is currently valued at over \$30 billion (Rossoff, 2016). This is a greater market capitalisation than that of established hotel chains, including Starwood, Wyndham, and Accor (Rossoff, Airbnb is now worth \$30 billion, 2016). This makes it harder for incumbents to pursue an acquisition of Airbnb. No reports of entities trying to acquire Airbnb have been found. There have been multiple rounds of investments in Airbnb, led by Google Capital, where other investors were not publicly announced (Farell & Bensinger, 2016).

Cooperate

Chief executive officer of Accor Hotels, Sebastian Bazin, has admitted that it was a mistake to not become an investor for Airbnb in an earlier stage, but indicates Airbnb is not a competitive threat and cooperation could be an option (Ahmed & Moore, 2015).

Hoteliers from the lower segment, in particular from the boutique segment, are joining Airbnb in a more literal sense, by putting up rooms on the platform (Kessler, 2015). These managers would normally be using other online travel agencies (OTA's) but now just consider Airbnb as an extra way to conduct online marketing. This may be an exceptional chance for these hotels as the commission fees are lower than listing on OTA's and it may extend their customer base (Bliss, 2016).

The CEO and president David Kong, of Best Western has proclaimed to have sincere concerns about Airbnb not only as a threat to the hotel industry, but also with regards to housing, taxation, and safety issues (May, 2016). Also Kong states that Best Western may list rooms on the platform.

4.2.3. Wait them out

There are many hotels and hotel chains that choose to not immediately respond to the rise of Airbnb. Many hoteliers see Airbnb as an addition to the market and not a threat to their core business (Salvioni, 2016). Intercontinental Hotel Group (IHG) chief, Richard Solomons, states that Airbnb is no threat as people will always trust hotels and know that they are safe as this might not be the case for Airbnb (Strong, 2014). CEO of Hilton Worldwide, Christopher Nasetta, pronounces that Hilton is in a different business than Airbnb and that Airbnb is not a threat to their core value proposition (Akan, 2015).

Choice Hotels CEO, Stephen P. Joyce, seems to acknowledge the threat of Airbnb on their market share, but also states that so far the impact is minimally noticeable (Ting, 2016). Choice hotels will focus on upscale brands to add to their collection.

5. Discussion

The analysis of Airbnb as a disruptive innovation shows that the online platform resembles multiple characteristics of disruptive innovation. The process of disruption

however has not found to be fully completed as for example in the hard disk drive described in the theory by Christensen (1997). In the chronological timeline of the disruptive process Airbnb can be noted to currently be in the fifth stage.

Airbnb matches the first characteristic of disruptive innovation in the sense that it underachieves on many attributes as valued by mainstream customers of all three segments of the hotel industry. The indicators of the second characteristic are more vaguely described in literature but are found to be corresponding. It is not specifically stated in literature that mainstream customers (of all three segments) do not value the attributes put forth by Airbnb, but slow progress and low adoption rate may indicate such phenomena. The difference in customers per segment may be presumed to have a relation with valuation of the attributes put forth by Airbnb. However, no clear relations can be concluded for this. Thirdly, Airbnb's lower price is clearly in comparison with all three segments of the hotel industry. Fourth, the initial growth in rate of adoption may well be attributed to the lower price put forth by Airbnb's innovation. A majority of users of Airbnb (55%) have adopted the innovation for the lower pricing. Fifth, from research study of Guttentag and Smith (2017) it is clear that Airbnb is improving on most of the attributes valued by mainstream customers. This is the case for all attributes of the lower segment, for some attributes of the mid segment, but still for none of the higher segment of the hotel industry.

Airbnb follows the characteristics of a disruptive innovation for the lower and mid segment hotels, but it can currently only be perceived as a potentially disruptive threat for the higher segment hotels. Airbnb does clearly form a disruptive innovation for the lower segment hotels, as the newcomers are perceived to perform better on every aspect presented and research by Zervas et al. (2014) shows that revenue impacts are highest for the lower segment. For the mid segment hotels, the revenue impacts may also grow as the majority of Airbnb users substitute hotel of the mid segment and the adoption rate is still rising (Nowak, et al., 2015). If there are no extreme improvements in attributes valued by the higher segment, Airbnb will most likely never be a disruptive innovation.

Industry response

Most common response has been to invest in the innovation Airbnb relies on or in competitors of Airbnb. The hotel industry is acknowledging the competitive threat and disruptive threat of Airbnb more. The findings of Airbnb fitting in with the characteristics of disruptive innovation correspond with the reactions noted in the industry. In particular, the lower and mid segments have responded, as the threat has been noticed and perceived more in these parts of the industry. As boutique hotels join Airbnb and mid-range hotels try to deliver similar services to those offered by Airbnb, the higher segment's response is mostly characterised by trivialising the threat.

Airbnb improvements

The future of Airbnb being a disruptive innovation for the mid segment is even more present with reports of Airbnb aiming to professionalise their service. CEO of Airbnb, Brian Chesky, announced that a 'cleaning service with fresh sheets and towels may be a starting point' (Carr, 2014, p. 4). To professionalise more and present more value on the attributes valued by mainstream customers of the hotel industry Airbnb has employed Chip Conley, the former founder and manager of Boutique hotel chain Joie de Vivre (Carr, 2014). This has led to standards that are advised for hosts to follow as: 'ease of booking', 'fast communication', 'no sudden changes in booking', 'check-in procedures',

'cleanliness' (Airbnb, 2017 b). Chesky and Conley built a 'hospitality lab' in Dublin where hosts can receive free training of nine key standards for hospitality and where Airbnb can learn from hosts (Yeung, 2013). As of 2010 Airbnb is trying to improve on 'ease of placing reservation' and 'ease of checking in/out' by adding an instant booking feature that allows consumers to book a home with one press of a button (Benner, 2017).

Limitations of the research

A limitation of this study is that there are many more variables involved. For example, cultural differences may impose a variable that is not taken into account as Koh and King (2017) have found. There are many more aspects that may be researched in terms of Airbnb as disruptive to the hotel industry. It is difficult to determine what the mid- to long-term impacts on the industry will be. As with passenger traffic in the airline sector, low-cost discount air carriers were expected to disrupt incumbents but principally turned out to enlarge the market (Forgács & Dimanche, 2016).

6. Conclusion

The main purpose of this section is to answer the research question: *Is Airbnb disrupting the hotel industry, and what is the response of the hotel industry?*

This question can also be answered in two parts. First off, Airbnb has been found to be a disruptive innovation for the hotel industry. The disruption is seen in the lower and mid segments of the industry, but it is not present in the higher segment of the industry. Accordingly, the response in the industry is also most present in the segments of the industry where Airbnb is most disruptive. In particular, the segments of the industry that are suffering the most revenue impacts have taken action. However, the overall direct response in the industry is minimal.

In this research comes forth that Airbnb is not yet a fully disruptive innovation. Airbnb has revenue impacts and is changing the hotel industry in multiple ways. This is also accompanied by the rise of information technology. Airbnb has found to be a disruptive innovation for the lower segment of the hotel industry and for the mid segment of the hotel industry. The higher segment is out of reach for Airbnb unless the firm may make extreme improvements, investments or cooperations.

The analysis of Airbnb as a disruptive innovation shows that the incentives for the industry are growing and more hotels are showing response. The interdependence between Airbnb as a disruptive innovation and the industry response is an intricate relationship.

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