COMPETING IN DIGITAL INFRASTRUCTURES. HOW A NORDIC HOTEL CHAIN COMPETES WITH THE ONLINE TRAVEL AGENCIES

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Abstract

Local and regional travel businesses are challenged by global Internet mediators, such as hotels.com, booking.com and Tripadvisor. The businesses are challenged in two ways; the Online Travel Agents take a substantial cut of the gross income, and the local company also loses the initial direct relationship with the individual customer. How can local and regional actors fight back?

This paper reports from a study of a large Scandinavian hotel chain, Nordic Choice. In analysing the case we build on the concepts of digital business strategy and digital infrastructures. The chain responded to the challenge by a strategy called eBerry, which we describe and assess. Our contribution is the conceptualization of competition in digital infrastructures, and some key elements of an effective digital strategy.

Keywords: Online Travel Agents, hotel chains, digital business strategy

1 Introduction: The Dual Face of Online Travel Agencies

The travel industry has gone through turbulent times the past two decades. First, in the late 1990s the travel agencies were bypassed by direct Internet booking at airlines and hotels. Ten years later, the structure was partly remediated as new Internet actors, the online travel agencies (OTAs) such as hotels.com and booking.com. Seen from the individual traveller these agencies provide convenient hotel booking; typically by listing the available hotel rooms at a destination, and sorting them according to various criteria. This allows for easy price comparison. In addition, meta-search services, such as TripAdvisor, can display differences between the OTAs.

For the travel providers (airlines, hotels, rental cars etc.) the OTAs came as a more mixed blessing. On the one hand, they offer an efficient distribution channel, making the travel services available on the Internet. On the other hand, particularly for the hotel industry, they position themselves between the customer and the travel service provider, representing a considerable challenge[1] (Toh, Raven, & DeKay, 2011).

The travel industry is information intensive, but, with the exception of airlines, not particularly IT savvy, and most companies have struggled to adjust to the dynamic competitive arena, which is driven by

[1] The airlines have competed more effectively, probably because their brands and web sites are better known by customers.

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Internet companies. Managers in the travel industry are service- and customer oriented, but possess, in general, little technology knowledge. However, managers realise that the new actors threaten the whole business model of the industry. First, the Internet mediators take an increasing cut of the price for the service; the OTAs are reported to charge 15-30% of the price. Second, by dealing directly with the customers the OTAs also accumulate the information needed to manage the customer relationships. As expressed by a top hotel manager we interviewed:

> "We run the risk of becoming a commodity provider of hotel rooms, auctioning out our free rooms to the hotels.com and the other OTAs, who will make all the profits, while we will be left to compete on price only".

Not surprisingly, this has led to strained relationships between the hotel industry and the OTAs (Lee, Basak, & Law, 2013; Toh, et al., 2011). In 2017 Rosetta Maietta, senior vice president of the American Hotel and Lodging Association, said, "The Expedia and Priceline duopoly hurts consumer choice and the small businesses in our industry (..) who are struggling to compete as a result of the gouging commission rates charged by the online travel agencies" (skift.com, May 5th).

What are the options for the hotels in achieving a more symmetrical relationship with the OTAs? Two main strategies have been discussed; to unite the large hotel chains in building more negotiating power or even establish industry-owned OTAs, or to develop chain-specific solutions that direct customers directly to the chains' web sites rather than the OTAs'.

In this article, we investigate how a regional hotel chain, Nordic Choice, developed a digital strategy to compete with the OTAs. Our research question is: *how can hotels and hotel chains compete with the OTAs in digital infrastructures?*

After reviewing the relevant research, we present the case, and analyse and assess the short-term results of the strategy. Our theoretical contribution is the conceptualization of competition in digital infrastructure, and we highlight some key elements of an effective digital strategy.

2 Relevant Research

In this section, we first briefly present research on the OTAs and the tensions with the hotel chains. To discuss the options of the hotel chains we build on the digital business strategy literature, and conceptualize the *space of competition* as a digital infrastructure.

2.1 Online Travel Agents

Seen from the customer the OTAs, such as hotels.com and booking.com offer a valuable service; it is immediately available on your laptop or mobile phone, it is easy to use, and transaction costs are negligible. A few clicks, alternatives are well presented, some more clicks, and your hotel room is ordered! People may still remember the extremely complicated process of ordering a hotel room in a Mediterranean village before the coming of booking.com and the others.

From a business perspective, the picture is quite different. For the incumbent firms of the various sectors exposed to global Internet competition the new actors are a formidable challenge. The OTAs have grown extremely fast to become multi-billion corporations. The platform literature (Parker, Van Alstyne, & Choudary, 2016a) has found that platform companies, such as the OTAs, consistently outcompete the traditional "pipeline" companies, such as hotel chains. The main reason is the network effects, which is the ability to connect, and financially leverage, an increasing number of providers and customers.

There are two dominating OTA groups, *Expedia Inc*. (total revenues 8.77 bn. dollars in 2016) and *Priceline Inc*. (revenues 10.64 bn. dollars in 2016), which own several OTA brands. Expedia Inc. includes hotels.com, Expedia.com, ebookers, Egencia (and several others), and meta-search services

such as Trivago. Priceline Inc. owns Booking.com, Priceline.com, Rentalcars.com, and the meta-search engine Kayak.com (Wikipedia).

The OTAs operate three different business models (Lee, et al., 2013):

- *The merchant model:* The OTA purchases hotel rooms at a discount and markets them for sale at a profit.
- *The agency (or commissionable) model*: The OTA enables bookings for hotel rooms at agreed-on prices, for which they receive an agreed-on commission on each transaction.
- *The opaque model*: The OTA matches buyers' bids with the lowest bid from the seller to maximize the OTA's profits through price differentials.

The agency model is mostly used, while Priceline pioneered the opaque model (Lee, et al., 2013). All three models are currently in operation.

For the hotels, the OTAs are both partners and competitors, but the relationship has soured, as the OTA has become the strong actor. In an interesting case study Lee at al. investigated a feud between Choice Hotels (an American global hotel chain) and Expedia Inc., initiated by a breakdown in negotiations of business terms in 2009 (Lee, et al., 2013). In a content analysis of the ensuing debate on the Internet, the researchers identified eight themes in three main categories, as shown in Table 1.

As illustrated by the debate (Table 1), there were strong feelings in the hotel industry on the asymmetry of the relationship to the OTAs, but great uncertainty on how to meet the competition. As the situation evolved in 2009, the feud ended after only one month, before Choice signed a new contract with Expedia Inc., presumably on the OTA's terms.

Category	**Themes**	**Findings from the debate**
1. The background to the feud	Characteristics of the hotel industry Current business environment Expedia's business practices	Fragmented hotel structure makes it hard to compete with the OTAs, who have a strong bargaining power. The OTAs take 20-30%, and dictate the deals
2. The perspectives of hospitality industry professionals on the feud	Wake-up call for hoteliers Choice Hotels' decision	The Expedia-Choice feud awoke awareness among the hotels Choice loses business, while other chains increase sales
3. Expectations concerning the nature of the relationship between hotels and OTAs	Symbiotic relationship between hotels and OTAs Experience of dealing with guests who book through OTAs Expedia's recommendations for hotels	Hotels may try to convince customers to "bypass" the OTA, and book directly Hotels may treat OTA customer poorly Hotels should pursue new strategies to compete more efficiently

Table 1. Findings adapted from Lee at al. (2013)

Summing-up, for the customer the OTAs are a convenient way to find and reserve hotel room, for the hotel industry the OTA are a considerable threat, where the hotels risk becoming sub-contractors of a commodity (rooms) to the two dominating global travel industry actors.

The main conclusion of Lee at al. (2013) was that hotels must find ways to make the most effective possible use of available technology and distribution channels, and perhaps even form consortia to share information about third-party distribution channels. This discussion has become prominent for the whole travel industry, and is continuously published on the SKIFT, a web site for the global travel industry (skift.com).

In order to investigate our research question, we draw on the research on digital business strategy and the theory of digital infrastructures.

2.2 Digital Business Strategy

Bharadway et al. (2013) presented some influential ideas on digital business strategy. Their key point is that firms are no longer served by an IT strategy (as one of several sub-strategies), but rather a digital business strategy, defined as an organizational strategy formulated and executed by leveraging digital resources to create differential value. The digital business strategy is described as different from the IT strategy in four aspects; *scope* (transcends traditional functional silos), *scale* (rapid digital scale up and down) *speed* (of product launches and decisions) and *source of value creation* (multisided business models and information). This also requires a different type of CIO.

In a study from the bank sector Sia et al. theorized four success factors for a digital business strategy (Sia, Soh, & Weill, 2016):

- A digital business strategy demands strong leadership
- An agile and scalable "core" is critical
- A digital business strategy exploits information abundance to create new value for customers
- A digital business strategy requires the continuous navigation of the dynamic and emerging digital landscape

The need for *strong leadership* highlights that a digital business strategy cannot be the responsibility of the IT department; it is the responsibility of the top management group, because it impinges on all parts of the organisation. Some organisations have chosen to assign a top manager, a Chief Digitalisation Officer (CDO), to front the digital strategy (Tumbas, Berente, & vom Brocke, 2017), and to set up a new digital competent organisation responsible for realising it (Sia, et al., 2016).

The *agile and scalable core* has to do with the architecture of the IT solutions. In an IT architecture context, the core is the central transaction registers and the middleware that enables the non-core services (such as user interfaces, mobile apps, partner services), to interact with the key data resources. In its purest form, the core is a platform, interacting with the app peripherals (Tiwana, 2014), such as Uber and Airbnb. In practice, structures are more complex; the core of an OTA includes a large number of interlinked systems. In the case of incumbent firms, such as hotel chains, the core used to be the central booking systems. However, the new digital infrastructure transcends organisational borders, and it is more difficult to define and establish a new core – but without a defined core it is difficult to implement a digital business strategy (Sia, et al., 2016).

To *exploit information abundance* to create new value for customers is another key point. The most salient example is Google, which has used the information generated by individual's search to establish a global advertising platform (Zuboff, 2015), based on continuous surveillance. The platform literature (Parker, Van Alstyne, & Choudary, 2016b) draws upon theories of two- or multi-sided markets to describe and analyse self-reinforcing processes where the availability of apps attract more users to a platform which again attract more developers to develop which again attract more app developers. The platform provides the information resources that enable this interaction.

Finally, a digital business strategy requires the continuous navigation of the dynamic and emerging digital landscape. Based on their unique strengths and resources, firms should constantly be searching for new sources of value and positioning themselves towards competitors and potential disruptors. Competing on these terms requires that we understand the 'space' we are competing in (Weill & Woerner, 2015) We propose to conceptualise this space as *digital infrastructures.*

2.3 Competing in Digital Infrastructures

Our theoretical lens is the research on digital infrastructures[2], i.e. the basic information technologies and organizational structures, along with the related services and facilities necessary for an enterprise or industry to function (Tilson, Lyytinen, & Sørensen, 2010). Examples of digital infrastructures in sectors and industries are the airline booking solutions, supply chains in retail, exchanges in commodities, and hotel booking in services such as the OTAs.

The theory of digital infrastructures is based on two assumptions; first, that we deal with large, interconnected solutions that extend singular systems and organisations, and second, that these structures evolve differently than traditional IT systems do, mainly through network effects. Since digital infrastructures often do not have a clear owner they cannot be centrally governed (Hanseth & Lyytinen, 2010), and since they are not planned and designed top-down, they grow by innovation, adoption and scaling (Henfridsson & Bygstad, 2013). Competing in these structures is different from competing in traditional markets.

To illustrate these points, a very simplified illustration of the digital hotel-booking infrastructure is offered in Figure 1.

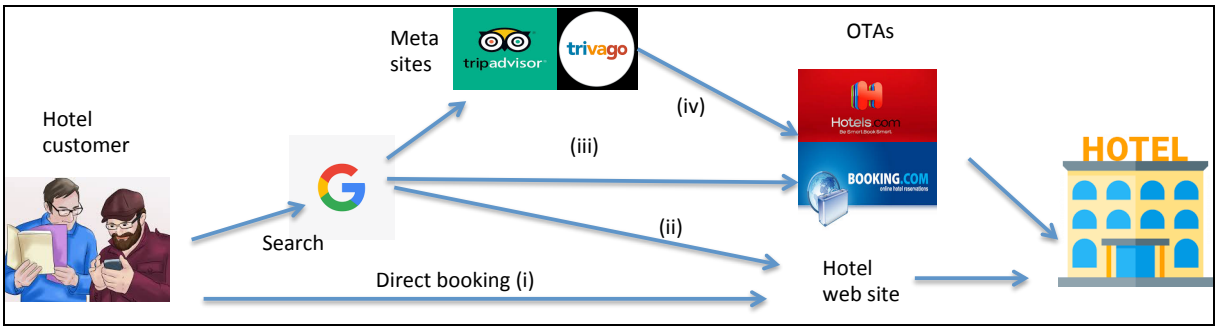

Figure 1. The digital hotel-booking infrastructure

We notice four booking paths in the figure:

- Path (i) is the direct booking, where the customer accesses and books on the hotel web site. In this case, the hotel will receive the full income.

The other paths are search via Google. Google will "auction" the customer profile, and present the hits according to the bids they receive. The OTAs are among Google's largest customers, and will usually appear on top of the Google hit list.

- Path (ii) is direct booking at the hotel web site from Google. The hotel will receive the income, but will often pay a fee to Google for appearing high up in the list.
- Path (iii) is going from Google to an OTA, where the room is booked, based on the OTAs access to the hotel room inventory. The OTAs will typically charge between 15 and 25% of the room price, depending on contracts.
- Path (iv) is going from Google to a meta-site, who will compare prices from different OTAs. The customer will choose one OTA and do the actual booking from there. The OTA will be charged by the meta-site, which will likewise be charged by Google. The price paid by the customer is more or less the same, regardless of the booking path.

[2] Also called information infrastructures or cyberinfrastructures

Using Bharadwaj et al.'s (2013) terms, we can describe the competition arena this way:

Scope: The digital arena is usually global, which means that local and regional knowledge may play a less significant role than in traditional markets. As Hirt and Willmott showed, the transparency of prices and services put increased pressure of pricing (Hirt & Willmott, 2014).

Scale: Network effects within multisided platforms create rapid scale potential. In addition, the network effects of expanding platforms often lead to one or two dominating global actors (Parker, et al., 2016a), where other players have to find a subordinate position.

Speed: One aspect is the general speed of change, as new competitors and channels arrive. Another is the speed of network formation and adaptation. For instance, plug-and-play business models are available for new actors, allowing quick restructuring of markets (Hirt & Willmott, 2014).

Source of value creation: Information itself has become a key resource, requiring specialised technical and commercial competence to leverage. For instance, control of industry digital architecture is a key competitive factor (Bharadwaj, et al., 2013) .

Summing-up, this digital infrastructure is continuously changing, in terms of actors, contract terms and traffic - and the marketing departments in incumbent firms are often poorly equipped to deal with this environment, both in terms of resources and personnel.

3 Method and Case

3.1 Method

To investigate competitive strategies in digital infrastructures, an in-depth case study (George & Bennett, 2005) was chosen. A large hotel chain was selected, for two reasons. First, in contrast to single hotels, a large hotel chain has the resources to establish a realistic strategy to compete with the OTAs. Second, in searching for possible organisations we identified Nordic Choice as an offensive player, which offered the opportunity to investigate a counter-strategy in detail.

Data collection was conducted over a period of 16 months through interviews with top managers, marketing officers and IT personnel; in total 15 interviews. In addition documents, such as business strategy, IT strategy, business cases, IT architecture and technical documentation were collected. The first author also engaged in the bonus program in order to get first hand experience from the customer side.

Data analysis was conducted in three steps (Miles & Huberman, 1994). First, a timeline and a case description were constructed. Then, building on Sia et al.'s framework, we conducted a comprehensive analysis of the case, in particular investigating leadership, the core of the digital infrastructure, the use of information to create value, and continuous navigation. Finally, we assessed the impact of the strategy and the feasibility of the approach.

3.2 The Case: Nordic Choice Hotels

Nordic Choice is a hotel chain based in Scandinavia. It includes 193 hotels, with 33.000 rooms, and had a turnover of 10.3 bn. NOK (around 1.1 bn. Euro) in 2015. There are 13.000 employees in Norway, Sweden, Denmark and the Baltics. The chain includes three brands, Comfort (budget), Quality (conference) and Clarion (high-end), and is owned by Petter Stordalen.

Stordalen is a Norwegian tycoon, who is engaged in hotel business, property, CSR, climate change and celebrity parties. His business philosophy is illustrated by the *strawberry principle*: As a young boy, he tried to sell his father's strawberries at the market place in a small town of Norway. Frustrated by the poor sales, he finally consulted his father: "The other strawberry vendors have nicer berries

than me, and they sell much more!" The father looked at the young boy and said: *Son, you have to sell the strawberries that you've got!*

It might be somewhat misleading to attribute the success of Nordic choice to the strawberry principle, but it highlights the combination of stubbornness and commercial instinct that characterises their management culture. This was also shown in the case of digital business strategy. In 2014 the vice president of the company, Bjørn Arild Wisth, initiated an IT strategy process based on a sudden realisation:

> "Frankly we had been sleeping for too long. The past decade had changed our communication with the customers. First, in the 1990s the online booking websites, such as hotels.com and booking.com emerged. We then regarded them as helpful add-ons, making it easier to find us, but got worried when their share of the room price got greedy. Then other services emerged, such as TripAdvisor, placing themselves between the customer and the booking web sites, also making money on our customers. Over time, an increasing share of our customers communicated with these sites, and not with us. I realised that if nothing were done we would end up as a commodity provider of hotel rooms, leaving the distribution to the Internet companies. This was a threat to our whole business model".

What the top management group did in 2015 was to craft a digital business strategy, and a new governance model. First, a new goal was formulated: The hotel chain should retain 75% of the bookings directly from the customers. Second, a new company was established, *the eBerry*, with the mandate to implement the strategy.

4 Findings

While the theory on digital business strategy (Bharadwaj, et al., 2013; Sia, et al., 2016) is relatively simple, implementing a such a strategy in an incumbent firm is extremely challenging (Svahn, Mathiassen, & Lindgren, 2017). In the case of Nordic Choice, the challenge is accentuated by the fact that the main competitors, the OTAs, are well-established digital platform companies, with 20 years' experience in digital competition and a dominating market position. Using Sia et al.'s (2016) framework, we illustrate the differences between the OTAs and Nordic Choice in Table 1. We discuss each of these issues subsequently in the following sub-sections.

Factor	**The OTAs**	**Nordic Choice**
1. A Digital Business Strategy Demands Strong Leadership	Platform companies, grown rapidly since the 1990s, and systematically acquired competitors	Traditional hotel chain, aiming to establishing a digital strategy through separate company eBerry.
2. An Agile and Scalable "Core" Is Critical	State-of-the art technologies, developed in a Devops environment	Connecting existing and new systems to the digital travel infrastructure
3. A Digital Business Strategy Exploits Information Abundance to Create New Value for Customers	Exploits large vendor base with customer preferences, reviews and actions, to find and compare hotel offers, and to decide and book a room.	Using customer information to fine-tune dialogue and room offers, leveraging the *second visit* approach
4. A Digital Business Strategy Requires the Continuous Navigation of the Dynamic and Emerging Digital Landscape	Continuous repositioning towards partners and competitors	The eBerry company is allowed autonomy to compete in the digital infrastructure

Table 2. The competitive arena of OTAs and the case hotel chain

Considering the power relationships expressed in Table 1, the challenge for the hotel chain is considerable. In presenting our findings, we first analyse how the Nordic Choice hotel chain met the OTA competition for each of the four aspects illustrated above, and assess the results. Then we discuss how the hotel chain combines the traditional and digital assets to increase its competitive strength.

4.1 Strong Leadership

The eBerry initiative was launched in January 2016. The stated aim was to create "the best ecosystem in the world for digital booking and guest travel experience". The idea had matured over some time, as the OTAs and other actors had started eating into the margins of the Nordic Choice. For instance, in 2010, a joint Nordic booking platform had been discussed with another large hotel chain, but it did not materialise.

The eBerry initiative was fronted by the owner Stordalen, and consisted of three main parts:

- A digital strategy
- The establishment of the eBerry company
- A loyalty program

To implement the digital business strategy it was decided to establish a new IT department, organised as a company. The in-house IT department was a traditional service provider, without the capabilities needed for the new strategy.

In late 2015 a CDO was hired, with a background from one of the OTAs, and the eBerry initiative was launched in January 2016. The mandate of eBerry was to maintain the main share of the bookings of Nordic Choice in the distribution chain. While the corporate head quarter is in Oslo, the eBerry was placed in both Stockholm and Oslo, and started to implement the strategy, short-term by entering the digital competition arena (negotiating with OTAs, search optimisation, continuous surveillance of digital traffic), and long-tern by investing in new digital solutions. eBerry has 140 employees, and quickly developed a different business culture. Said the CDO:

> "We do not run projects; we aim to be a technology firm, building products. We have three main products; the Nordic Choice web site, the integration platform, and the Nordic Choice app. We run the distribution for Nordic Choice, with a turnover of five bn. NOK each year. We are responsible for the loyalty program, campaigns and booking. We also have a "Future Business" unit, developing new technologies and ideas, such as robots".

The first year was successful, improving search optimization etc., and eBerry also started on long-term platform building.

4.2 An Agile and Scalable "Core"

Moving from a relatively simple booking system to a digital infrastructure was challenging. Commented the CDO:

> "Legacy systems are a big challenge, both the 6 year old web solution and the old booking systems. We need a flexible platform, which is difficult to create. In addition, recruiting top competence is challenging. The traditional hotel culture is not congruent with the young IT geeks we are recruiting."

The digital infrastructure is illustrated in Figure 2 below. On the left side are the OTAs and the travel agents that have direct access to systems (CHI CRS) with information about room availability and rates. In the middle are Nordic Choice's legacy systems: the web site (choice.no/se/dk), the central booking system CCIS, and Cenium, an ERP for the hospitality industry. On the right side are the new eBerry solutions, the SuperOffice CRM, the bonus system, a new booking platform (CES) and the Choice apps.

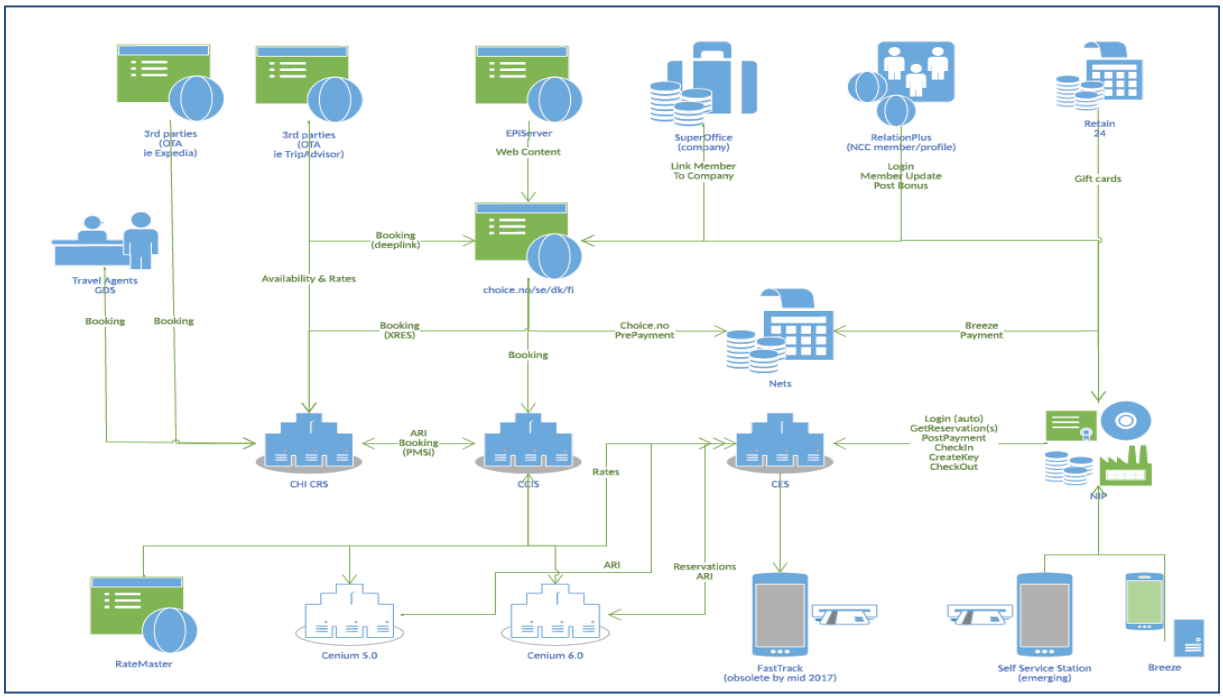

Figure 2. Digital infrastructure of Nordic Choice

Three issues are notable in Figure 2. First, it shows the interconnectedness of the infrastructure; it includes the central Choice booking system (CCIS and Cenium), but also the OTA services, the payment service (NETS) and the Nordic Choice apps (lower left). Second, it illustrates the dual character of the new *core*; it includes the old core (old booking systems) and the new booking service CES and associated middleware. Finally, it shows how the modularization increases the agility of the solution. On the other hand, since it includes several old solutions, it is much less agile than the OTA infrastructures, who have invested heavily in new technologies the past decade.

4.3 Exploiting Information To Create New Value for Customers

How does the eBerry initiative compete on information?

The relationship between the OTAs and Nordic Choice concerning information abundance is deeply asymmetric, with the OTAs at great advantage. The OTA has access to vast amounts of information, such as customer preferences, reviews and actions. In addition, they have access to Google search history. They also have developed sophisticated software that traces the actions of each potential customer, in order to place clickable offers in emails.

The eBerry has access to much less information. It has of course the details of previous bookings, and the profiles of established customers from the CRM system. In addition, by surveilling the activities on the Choice web site, it can analyse traffic and individual profiles, but with much less information than the OTAs.

To mitigate this disadvantage Choice instigated the *second visit strategy*: accepting that a relatively large share of the first-time customers will book through the OTAs, the arriving customer will always, at the check-in, be offered the membership in the Choice bonus program. The program includes a rela-

tively standard package of benefits, such as bonus points and extra services. The benefit for Choice is a direct contact with the customers (a weekly email), always reminding the customer that the easiest and cheapest[3] way to book is through the Choice booking app or web.

4.4 Continuous Navigation in the Digital Landscape

The digital infrastructure of hotel booking is constantly changing. One manager commented:

> "New issues arrive all the time and we need to adjust as we go. Four years ago we were very naïve and few in the industry understood the power of platforms. Now the OTAs has grown so big that we have to compete head-on, for instance by conducting analytics at the level of the individual. We organise our marketing activities by distribution channels; some work with the OTAs, other with meta-sites and travel agencies. We negotiate distribution deals, and renegotiate them when needed."

The OTAs frequently change their business tactics, as new services are launched, and new actors arrive. The role of Google is important, as it is the gatekeeper to most of the traffic. The eBerry organisation deals with this on all managerial levels:

- Strategy: the top management group and the Board assess the positioning toward the OTAs (and Google) frequently. Managers frequently follow the SKIFT (industry) web site, and participate in international forums.
- Tactics: Much of the tactics is about communicating directly with the customers. One important aspect is educating the customers. For instance, if a customer wishes to register bonus points, staff will tell him/her that there are no bonus points earned if the booking was done through the OTAs.
- Operations: Surveilling the web and booking traffic 24/7 is routine, and the information is analysed daily.

One tactical challenge is perhaps banal, but very important: when people search on Google they seldom go further than the first page. As anyone can check with a Google hotel search, the OTAs consistently appears on top of the search, often in different views, relegating the hotels to the following pages. (The OTAs are among Google largest customers). While this can be improved with search optimization, it is extremely expensive to buy into a higher position.

4.5 Summing-up

The eBerry strategy has been operative only since January 2016, and Nordic Choice plans to invest around 250 mill. NOK in digitalisation the next 4-5 years. eBerry has the full responsibility for the Choice distribution. The results have been satisfactory:

- The share of *free bookings*[4] on own web site has stabilised around 50%
- The on-going competition in the digital infrastructure is handled by Choice's own expertise

This however is only a start. The high ambition of the eBerry initiative, expressed as "creating the best ecosystem in the world for digital booking and guest travel experience" is a long-term goal. It includes much more than the room booking, but it will nevertheless be hard to achieve without effective competition with the OTAs.

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[3] Usually, the OTAs require "price parity" in the contract, but Choice has successfully negotiated an exception from this.

[4] This excludes group and conference booking, and bookings from travel agencies

5 Discussion

We return to our research question, *how can hotels and hotel chains compete with the OTAs in digital infrastructures?*

In discussing this issue, two main strategies have been assessed; to unite the large hotel chains in building more negotiating power or even establish industry-owned OTAs, or to develop chain-specific solutions that direct customers directly to the chains' web sites rather than the OTAs (Toh, et al., 2011). Responding to the first point, in 2011/12 an industry initiative was taken to establish a joint service to compete with the OTAs, but the hotel chains could not agree on the strategy. At the moment, no such initiatives are known.

In this study, we have focused on the options for the individual hotel chain. We have highlighted that competing in digital infrastructures is different than in traditional markets, and that this is particularly challenging for incumbent firms, which have to balance their traditional and digital strategies (Svahn et al., 2017). Considering the literature and our case evidence, we see three effective measures.

5.1 Establish Digital Competence

First, to be able to compete in the digital infrastructure the company must establish specialised competence, at strategic, tactical and operative levels. Few firms in the travel industry are technology firms. Although some services can be bought from consulting firms and specialised Internet marketing wizards, the implementation of a digital business strategy is a core task also for the incumbent firm (Sia, et al., 2016; Svahn, et al., 2017).

Moreover, many firms find it beneficial to employ a new executive at the top management level, a Chief Digital Officer, to make the digital transformation a strategic priority, and to orchestrate the various initiatives (Singh & Hess, 2017). It is hard to overstate the importance of the role of the top management group in not only developing the strategy, but in promoting and supporting the implementation.

Additionally, the company should consider establishing a dedicated digital competence centre. Should the competence centre be established outside the incumbent firm as a separate business unit, such as the eBerry solution? The argument for this is mainly the need to develop a new business culture, characterised by agility and digital innovation, recruiting employees from the digital community rather than from the industry. On the other hand, a new organisation may lead to tensions with the mother company. Alternative governance models for digitalisation are suggested (Bygstad & Iden, 2017).

5.2 Take A Position In The Digital Landscape

Second, the company must decide on its position in the digital infrastructure. As digital infrastructures are constantly evolving, this is a continuous task (Tilson, et al., 2010). The firm must decide on which combinations of services and capabilities that should be part of the digital landscape, which the firm is competing in.

Moreover, digital infrastructures are shared and open, and blurs organisational boundaries (Hanseth & Lyytinen, 2010; Tilson, et al., 2010). This implies, as in the case of the travel industry, that hotels must deal with OTAs as both partners and competitors, and select the according arenas. The SKIFT web site (skift.com) has an on-going and detailed discussion on the relationships between hotels and OTAs, such as:

- On May 5th 2017 it was reported that the U.S. hotel industry plans to step up a lobbying and public relations attack on Expedia Inc. and Priceline Group Inc., hoping to convince consumers and members of the Trump administration that the travel-booking giants are monopolistic.

- On 18th July 2017 a study showed that in 21 percent of bookings the OTA or metasearch site had a lower price for a room. The majority of hotels in the sample (66 percent) had the same listed price on OTA.
- On 20th July 2017 it was reported that Google was running tests on a hotel price comparison tool, with the possible prospect of outflanking the OTAs.

The key point here is that the relationships, in contrast to the long-term partnerships of the traditional hotel industry, are fluent and unstable. Therefore, the IT solutions should be scalable, flexible and robust enough to deal with this changing landscape. An illustrating example is the eBerry IT solution (Figure 2), which shows how their own systems are connected to the OTAs, but also how they restrict the OTAs access to their inventories.

5.3 Leverage The Interplay Of Non-Digital And Digital Resources

Third, a hotel chain can leverage its non-digital and digital resources more tactically. The best non-digital example from the case is the second visit strategy, where the customer at the check-in desk is recruited to the loyalty program. This is an occasion where the hotel has a real advantage over the OTAs, since only the hotel meets the customer face-to-face. There are many other situations, where the hotels could connect the customer much closer to the hotel.

The concept of *digital customer experience* is one such possibility. The eBerry plans includes a number of new services from the loyalty app, such as using it for room access, room service, fast check-in and checkout. These services have real benefits for the hotel guest, and they will increase the value of the loyalty program, as well as the Choice infrastructure.

5.4 Limitations

This paper offered a description of the competitive situation in 2017. The digital infrastructure is evolving continuously, and we should expect more changes in the coming years. For instance, actors such as Airbnb may change the competitive arena. Also, the position of the OTAs may weaken as their systems become larger and more complex, and the role of Google may also change. Therefore, in order to understand the underlying forces it is necessary to conduct more longitudinal studies.

6 Conclusion

Digitalisation and the online travel agents, such as Expedia and Priceline have challenged the business models of the traditional hotel chains. In this paper, we investigated how the chains can compete.

Building on an in-depth case study of Nordic Choice, we propose to conceptualise the space of competition as a digital infrastructure, where the hotel chains must establish a position and learn how to manoeuvre in an informed and agile way. We suggest three measures for meeting the competition; (i) establish digital competence, (ii) take a position in the digital landscape, and (iii) leverage the interplay of non-digital and digital resources.

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