Virtual Experience on Hotel Websites: A Web Analysis

Marcel Grüter[a], Vanessa Schneider[a] and Thomas Myrach[a]

[a]Institute of Information Systems
University of Bern, Switzerland
marcel.grueter@iwi.unibe.ch

Abstract

Visual presentation formats (VPFs) enable a hotel service offering to be experienced virtually on the web prior to purchase. This study addresses the potential benefit of VPFs for providers, taking the Swiss hotel business as an example. A web analysis examines for the first time the prevalence of individual VPFs in the Swiss online hotel market. While pictures appear on nearly every website, the use of videos and three-dimensional (3D) presentation formats is much less common. These two formats are found primarily on websites of higher-end hotel establishments. Based on the results, implications of VPFs for hoteliers are derived. It has been shown that websites in the Swiss online hotel market can be differentiated from the competition through the use of videos and 3D presentations, and this in turn could have a positive impact on brand awareness, image and confidence in the hotel on the part of the customer.

Keywords: Virtual Experience, Visual Presentation Formats, Swiss Hotel Business, Web Analysis.

1 Introduction

A representative and innovative website enables hotels to present themselves and the services they offer (Schegg, Steiner, Jufer, & Liebrich, 2005). A promising solution to allow customers to experience the hotel offering is the use of visual presentation formats (VPFs), including pictures, videos and three-dimensional (3D) formats (Cho, Wang, & Fesenmaier, 2002; Herstell, 2008). In the context of the impact of VPFs, the literature uses the term virtual experience (Jiang & Benbasat, 2005, 2007a; Li, Daugherty, & Biocca, 2001). Virtual experience is of particular relevance to hotel services. Like many other services, a hotel stay is an intangible and, as such, its quality features cannot all be examined prior to purchase; consequently, compared to physical products, it carries a higher purchasing risk (Koernig, 2003; Parasuraman, Zeithaml, & Berry, 1985). Services do, however, also possess distinctly tangible components, including for example, physical fixtures and fittings, work equipment and the appearance and impression of staff (Engelhardt, Kleinaltenkamp, & Reckenfelderbäumer, 1993; Parasuraman, et al., 1985). These can be used as reference points for judging the quality of the service (Müller, 2004; Parasuraman, Zeithaml, & Berry, 1988). Normally, the tangible components of a service cannot be experienced until during or after purchase; consequently they are classified as experience attributes (Nelson, 1970). Using VPFs, however, it is possible to experience some of those attributes (virtually) on the web prior to purchase (Wright & Lynch, 1995).

This raises the question of the extent to which hoteliers benefit from enabling customers to have a virtual experience of their service through the use of various VPFs. Indeed, evidence already exists of many positive effects of virtual experience (Chiou, Wan, & Lee, 2008; Daugherty, Li, & Biocca, 2008; Griffith & Chen, 2004;

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Park, Lennon, & Stoel, 2005; Park, Stoel, & Lennon, 2008). However, studies into this often focus on products and the mediation of information by 3D formats (Edwards & Gangadharbatla, 2001; Kim & Forsythe, 2008, 2009; Suh & Lee, 2005). Yet, pictures and videos are a particularly efficient means of delivering information about hotels, as the implementation of 3D formats can be significantly more costly and more complex compared with the other VPFs (Herstell, 2008; Wüthrich, Blattmann, Grüter, & Myrach, 2009).

In terms of the benefit they provide, the prevalence of individual VPFs is of key importance. The more a particular format is actually used, the less potential it offers for differentiation from the competition. The use of particular VPFs on hotel websites could offer hoteliers certain benefits, if use of these VPFs is not very widespread in a certain online hotel market. This is why, taking the Swiss hotel business as an example, a web analysis will be used to show which VPFs are found on hotel websites and how frequently, and what potential benefit can be achieved as a result. The differences between individual hotel categories will also be considered. Data on the prevalence of VPFs in the Swiss online hotel market has not been collected before. The aim, ultimately, is that the results of the study should lead to a better understanding of the potential benefit of VPFs for providers in the context of virtual experience.

The rest of the paper is organized as follows. A theoretical description of various VPFs in the context of virtual experience is followed by a presentation of the methodology and results of the web analysis. The web analysis is intended to identify the prevalence of VPFs in the Swiss online hotel market; the impact this has on certain benefit variables is then discussed and implications for practice are derived. After a discussion of limitations and implications for future research, the work concludes by summarizing the key findings of the study.

2 Theoretical Background

This section will explain the role of various VPFs in the creation of virtual experience as part of a hotel service offering. We will start by discussing virtual experience in the context of the hotel business. VPFs relevant for the study are then presented and their potential for generating virtual experience is demonstrated.

2.1 Virtual Experience in the Hotel Business

Virtual experience is when a product or a service can be experienced on the web by means of VPFs (Cho, et al., 2002; Griffith & Chen, 2004; Grüter & Myrach, 2012; Jiang & Benbasat, 2005). The experience involves interaction with 3D or two-dimensional (2D) presentation formats (Chiou, et al., 2008; Jiang & Benbasat, 2007a; Li, et al., 2001; Park, et al., 2008; Wan, Tsaur, Chiu, & Chiou, 2007). The methods of interaction include visual controls such as zoom and rotation as well as functional controls, for instance clicking on buttons with the mouse to produce a corresponding response by the VPF (Li, et al., 2001; Suh & Lee, 2005).

The suitability of products or services for information mediation by VPFs on the web depends critically on their sensory attributes (Suh & Lee, 2005). Virtual experience can be used to mediate visual, auditory or functional information (Li, Daugherty, &

Biocca, 2003). Olfactory or tactile information, by contrast, cannot be conveyed over the web (Keng & Lin, 2006). In the case of a hotel offering, while for example the comfort of a bed (tactile) can be assessed by 3D and realistic presentation formats, it is only by actually trying the bed that a definitive judgment can be made (Li, et al., 2003). Given that hotel guests themselves are part of a hotel's offering, many visual, auditory or functional attributes, as well as other attributes – the friendliness of hotel staff, for example – cannot be experienced or judged until the guest is actually staying in the hotel (Koernig, 2003; Stafford, 1996). On the other hand, tangible attributes such as the layout and furnishings of the hotel room, equipment at reception, the external appearance of personnel or a tangible output such as the taking of a souvenir photograph at dinner can be represented in advance (Engelhardt, et al., 1993; Parasuraman, et al., 1985). These visual attributes can be experienced through visual control, for example the ability to select and enlarge pictures, fast forward and rewind videos and zoom and rotate panoramas. In this way, VPFs can enable a hotel offering to be experienced on the web, prior to purchase (Jeong & Choi, 2004).

For a virtual experience of a hotel, the viewer is seated physically in front of the computer and feels transported into a virtual location by the VPF (Shih, 1998). This is explained by the construct of telepresence. Telepresence is the experience of presence in an environment by means of a communication medium (Steuer, 1992). The virtual environment is of special significance in terms of the hotel business. Simply portraying a product in an empty space (against a white background, for example) indicates a low level of telepresence. In the case of services such as the hotel industry where physical spaces constitute an important part of the offering (Koernig, 2003), telepresence is higher. VPFs enable hotel facilities to be assessed visually prior to purchase, by giving the viewers a sense of presence in the hotel (Jeong & Choi, 2004). In the hotel business, therefore, virtual experience is understood to mean experiencing a physical space by representing it using VPFs (Cho, et al., 2002). In this context, virtual experience and telepresence are almost synonymous (Grüter & Myrach, 2012). Which VPFs enable virtual experience will be discussed next.

2.2 Visual Presentation Formats

When considering VPFs, a distinction can be made between 2D and 3D formats. 2D formats consist essentially of individual pictures or photographs presented in one plane, defined by height and breadth. Static pictures and videos come into the category of 2D formats (Hansen & Neumann, 2005). Static pictures are placed in isolation on a web page or are integrated into a gallery or a slide show (Wüthrich, et al., 2009). With video, a sequence of images is played in a manner similar to an automatic slide show. Unlike the automatic slide show, however, with video the image sequence cadence is so high that the pictures are no longer perceived as individual images, instead they produce a flowing motion (Hansen & Neumann, 2005; Jiang & Benbasat, 2007a).

Compared to 2D formats, 3D formats have a depth dimension, in addition to breadth and height and this enables computer-generated geometric objects, such as cubes for example, to be created (Bauer, 1996; Chen, 1995). The implementation of pictures into these objects enables environments to be represented in three dimensions (Herstell, 2008). VPFs which are able to generate 3D environments based on the use

of geometric objects, are described collectively as 3D formats in this study. These include, for instance, virtual tours consisting of linked 360° panoramas where static pictures are arranged in a geometric space (Kwiatek, 2005). They also include virtual reconstructions, the only VPF to be based not on static pictures but on computer-generated graphics (Bauer, 1996).

The individual VPFs can each produce a different degree of telepresence. The higher the telepresence in a VPF, the more closely the virtual experience resembles the actual experience (Klein, 2003). Steuer (1992) and Hyun et al. (2009) attempted to determine theoretically the potential of VPFs to mediate telepresence. They classified VPFs according to the two variables, interactivity and vividness, which are also defined as determinants of telepresence (Coyle & Thorson, 2001; Khalifa & Shen, 2007). Steuer (1992) defines interactivity as the degree to which an individual can modify the form and content of a mediated environment in real time. Interaction may involve, for example, manipulating a virtual object or navigating through a virtual space (Herstell, 2008). Vividness is a technical aspect referring to the ability to transmit information over several parallel channels (Fiedler & Gallenkamp, 2008). It covers the number of channels of a medium which engage different senses simultaneously (for example, graphics, sound, speech, mimic or gesture), as well as the resolution or quality of the particular channel (Fiedler & Gallenkamp, 2008; Steuer, 1992).

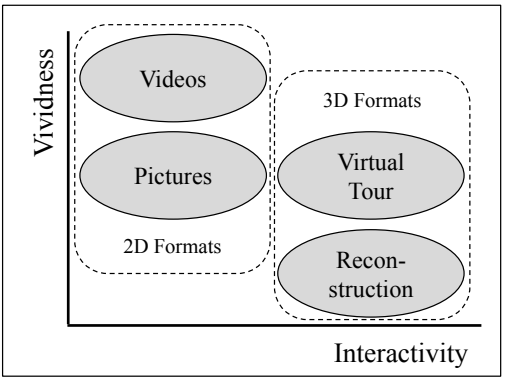

Fig. 1. Classification of VPFs according to telepresence

Figure 1 shows how the two studies classify the different VPFs based on their interactivity and vividness (Hyun, Lee, & Hu, 2009; Steuer, 1992). Assuming that the quality of the presentations is of the same standard in each case, videos by virtue of using the visual and auditory channel possess higher vividness than pictures or 3D formats which convey only visual information. Virtual reconstructions are not based on photorealistic underlying modules, consequently they are ranked lowest for vividness. In terms of interactivity, 3D formats are superior to videos and pictures. With static pictures, interaction is limited to selecting and enlarging individual pictures, while videos only have fast forward, rewind or pause options. In addition to actions such as rotate or zoom, 3D formats also support the integration of functional

responses of objects (Li, et al., 2001; Suh & Lee, 2005). Overall, pictures exhibit the lowest level of telepresence. Videos generate as high a level of telepresence on the basis of vividness, as virtual reconstructions can produce on the basis of interactivity. Due to their medium level of vividness and their high level of interactivity virtual tours have the highest level of telepresence. Accordingly, videos and 3D formats should be more significant for virtual experience than static pictures.

3 Web Analysis

The aim of the web analysis was three-fold. First, to investigate how prevalent the individual VPFs already are on Swiss hotel websites. Second, to identify any difference in prevalence between different hotel categories. Finally, based on the results, to draw conclusions on the prevalence and relevance of VPFs in the Swiss hotel business. In this section methodology and results are explained.

3.1 Methodology

The data collection grid used for the web analysis was a category system in which the instances of various criteria (categories) were recorded in coded form. The criteria consist of the presentation formats pictures, videos, 360° panoramas, virtual tours, virtual reconstructions plus the additional category, text. The instances were recorded in each case with the codes 1 for "present" and 0 for "not present". The presentation formats were only recorded, if they showed, or in the case of text, described, either the public areas (e.g. lobby, restaurant, swimming pool etc.) or the guest rooms of the hotel. Four coders analysed 1,462 hotel websites in the period from Oct. 16, 2009 to Dec. 10, 2009. The intercoder reliability calculated with Holsti's method constitutes a reliability coefficient of R=0.96. This means that the four coders recorded 96% of all instances identically (Mayring, 2008). The hotels analysed were 932 three-star, 442 four-star and 88 five-star hotels, registered with the Swiss hotel association hotelleriesuisse (www.hotelleriesuisse.ch [Oct. 8, 2008]). Originally the sample for the web analysis comprised 1,488 hotels. Not included in the sample are 26 hotels which did not have their own website or their website did not display. This meant that in 2009, 98.25% of the three- to five-star hotels registered with hotelleriesuisse had their own website. With reference to these hotel categories, a full survey was conducted (Früh, 2011). Lower-category hotels were not included as these presumably have only limited resources available to create their website and therefore rarely use different VPFs. The aim here was to obtain more meaningful information on the differences between the various VPFs.

3.2 Results

In the descriptive study design, the results were analysed using descriptive, univariate methods (Homburg & Krohmer, 2003). In most cases, these are relative frequency distributions of the type normally used to evaluate content analyses (Mayring, 2008). First, it was calculated how many different presentation formats Swiss hoteliers use on their websites to visualize public areas and guest rooms. As can be seen in Figure 2 the majority of hotels, 76.1%, use two different presentation formats for their website. Three presentation formats are found on 20% of all websites and 2.5% have as many as four different formats. A minority promote their offering with only one or indeed

none of the presentation formats in the study. The latter use no text, for example, instead they simply provide the hotel's contact details, sometimes accompanied by a picture. In these cases, the website serves as an online business card. Others may use words to describe what the hotel has to offer, but add no pictures which show the hotel facilities.

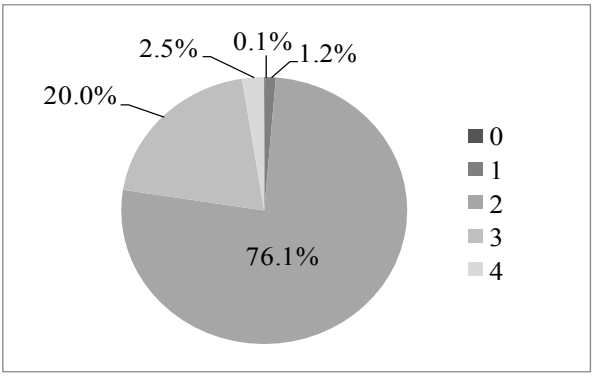

Fig. 2. Number of presentation formats used per hotel

At the time of the study, two hotels were using neither pictures nor a text-based description of the facilities. Furthermore, it turned out that the higher the hotel classification, the more different presentation formats are used on the websites. Correspondingly, the mean value of the amount of presentation formats within three-stars hotels (2.17) differs with $p<0.01$ significantly from the one of higher-end hotels. The mean values of the four- (2.31) and five-star hotels (2.56) are also different with a significance level of $p<0.1$.

In most cases, however, text and pictures are present on the websites. As the chart in Figure 3 shows, these two presentation formats are each found on 99% of all websites. By contrast, other VPFs are encountered much less frequently on hotel websites. At 13%, video is provided to approximately the same extent as 360° panoramas, for which the figure is 12%. Virtual tours are implemented on only 1% of all websites, while no example of a virtual reconstruction could be found.

Figure 4 shows the relative frequencies of VPFs in relation to websites in individual hotel categories. Given their low frequency of use, 360° panoramas and virtual tours have been combined into a single category, 3D formats. For the picture category, we can see that all four-star and five-star hotels provide pictures on their websites. Only 1% of the three-star hotels make no use of this VPF. These few hotels do not represent their facilities visually. At most, they are described using text. While, in absolute terms, videos and 3D formats are found most frequently on the websites of three-star, followed by four- and five-star hotels, the ranking is reversed when considering relative frequencies. While 9% of the websites of three-star hotels contain videos and 10% contain 3D formats, the corresponding figures for four-star hotels are 17% and 16%. Videos and 3D formats are found most frequently on the websites of five-star hotels, with 31% having videos and 25% 3D formats.

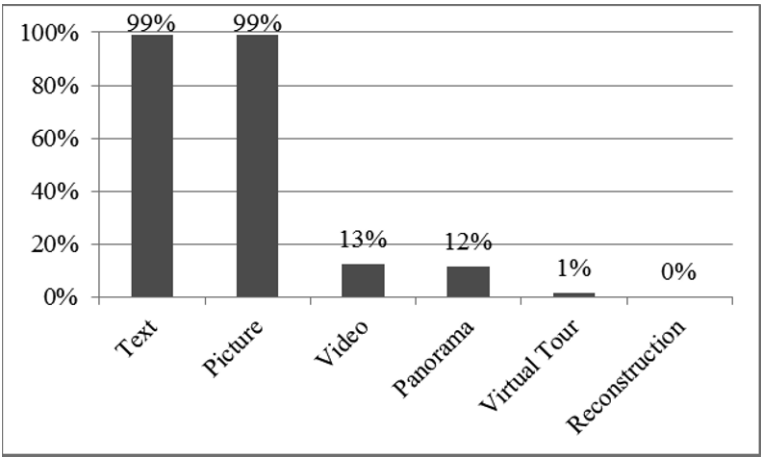

Fig. 3. Overview of the presentation formats used

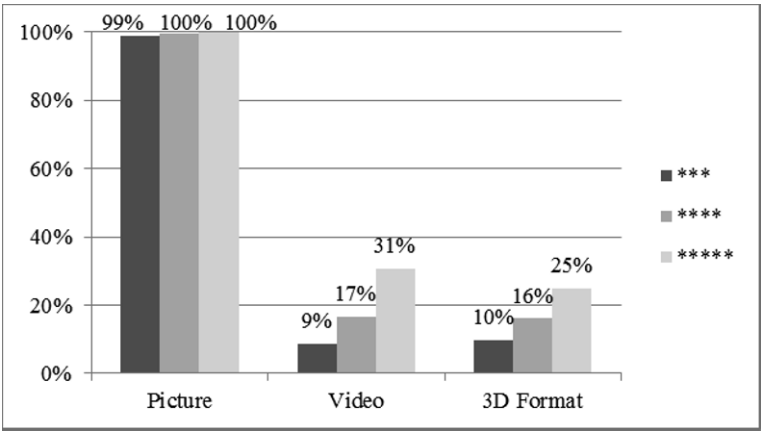

Fig. 4. VPFs used according to hotel category

The frequency distribution for videos and 3D formats suggests that the higher the star rating of the hotel, the more likely it is to have a video or 3D format on its website. As the dataset meets all the necessary requirements, cross tables with the corresponding chi-square values could be generated to check this assumption (Brosius, 2008). The chi-square values of both VPFs compared with their use in the three hotel categories show a significance level of $p<0.01$. The differences in the frequency distributions are thus significant. The assumption that higher-end hotels are more likely to provide videos or 3D formats on their websites is confirmed by these results.

4 Discussion

Based on the findings, in this section, implications for practice will be drawn. This is followed by a description of limitations which have to be considered in the present study. Finally, future research on VPFs regarding virtual experience is discussed.

4.1 Managerial Implications

Various studies have shown that benefit variables including attitude towards brand, shopping enjoyment and purchase intention can be achieved through pictures, videos and 3D presentation formats (Chiou, et al., 2008; Daugherty, et al., 2008; Jiang & Benbasat, 2007b). In some cases, videos are superior to pictures (Khalifa & Shen, 2007; Klein, 2003; Li, et al., 2003; Park, et al., 2005). 3D formats are, however, best at achieving the intended effects (Jiang & Benbasat, 2007b; Li, Daugherty, & Biocca, 2002; Suh & Lee, 2005). Videos and 3D formats are therefore preferable to pictures. The results of the web analysis provide another reason why videos and 3D formats should be used on hotel websites. Usually, no more than two different presentation formats are used to promote hotel facilities on hotel websites in Switzerland. These are primarily text and pictures, which are found on virtually all of these websites. Most Swiss hotels already enjoy the beneficial effects of pictures. By providing additional VPFs, hotels could make themselves stand out from the crowd. At present, videos and 3D formats such as 360° panoramas or virtual tours are the main candidates for delivering a better visual information offering as a means of differentiation from the competition. Virtual reconstructions, on the other hand, are not recommended. It is assumed that hoteliers would prefer to portray their facilities by means of real photographs rather than abstract virtual reconstructions as spaces depicted photorealistically are easier for the consumer to visualize.

Three benefit variables should be cited which are assumed to be positively influenced specifically by videos and 3D formats because their prevalence has so far been relatively low on Swiss hotel websites. These three benefit variables are brand awareness, image and confidence in the hotel. First, these two VPFs would extend the information offering beyond the standard presentation formats. The use of videos or 3D formats could reinforce the consumer's memory of the website and the hotel, as these VPFs do not appear on other hotel websites and for that reason make a particular impression. This, in turn, would have a positive impact on brand awareness. Second, by using newer VPFs such as videos and 3D formats, a hotel can project an innovative, modern image. Third, the use of additional VPFs would not only give consumers more information, they would also be able to decide for themselves how to access that information and this would increase confidence in the information provided. Not only would this enhance information transparency but the ability to choose how information is visualized also increases customer focus and this, in turn, could have a positive impact on image.

No differences were identified between the use of videos and 3D formats. However, videos and 3D formats incur significantly higher costs than text or pictures (Wüthrich, et al., 2009). This could explain why higher-end hotels are more likely to provide videos or 3D formats. Higher-category hotels tend to have more resources at their disposal than lower-category hotels and so are more able to afford to produce more costly VPFs such as a video or a virtual tour. Given the benefit outlined above, it

could however be worthwhile for lower-end hotels too to supplement their information offering with at least one other VPF in addition to text and pictures. At present, it is true to say that the lower the hotel category, the fewer VPFs are provided which means that the potential for differentiation in terms of brand awareness, image and confidence in the hotel is all the higher.

4.2 Limitations

The Swiss hotel business was used in this study as a case example. As a representative sample of all Swiss three-, four- and five-star hotels, the websites of those hotel establishments registered with hotelleriesuisse at the start of the study period were analysed. The results are therefore not informative for one- and two-star hotels but according to hotelleriesuisse these account for less than 20% of all hotel establishments in Switzerland (www.hotelleriesuisse.ch [Apr. 26, 2012]). Moreover, other presentation formats exist in addition to the VPFs proposed in this study. These are mostly hybrid formats comprising pictures, videos, panoramas or virtual tours. Examples include animated pictures, 360° video panoramas and interactive virtual tours which are enriched with videos and pictures. It would be desirable to include such VPFs in any future studies. Finally, with the web analysis method, non-verifiability is an issue as website content is constantly changing or disappearing (Welker et al., 2010). To overcome this problem as far as possible the study process was described precisely and narrow time windows for data collection were defined (Herbers & Friedemann, 2010). Archiving of the study units was not possible as these were dynamic web pages for the most part.

4.3 Future Research

Future studies should examine the proposed effects using quantitative empirical methods. Another question to be addressed is what advantages VPFs have for other service sectors in addition to the hotel sector considered here and whether the results of this study are transferable to those sectors. Adapting the results to another sector could provide additional validation for the results of this study. The disadvantages of VPFs should also be considered. These might include, for example, variables from a provider perspective such as implementation costs of VPFs or the interchangeability of visual content. From a consumer perspective, variables such as ease of use, usability and cognitive overload could play a role in this context and have a negative impact on the benefit for providers. Furthermore, future studies should also analyse more closely the content mediated by VPFs. The aim of a potential hotel guest looking at a VPF is to obtain information about the hotel offering that is as comprehensive as possible. Further studies could, for example, examine which VPFs are best able to mediate specific information attributes.

5 Conclusions

The present study discusses potential beneficial effects of virtual experience for providers based on different VPFs on Swiss hotel websites. By focusing on the hotel sector, the construct of virtual experience was considered in a service context, which has rarely been done before. The web analysis describes for the first time, the prevalence of different VPFs in the Swiss online hotel market. As well as the

frequency of VPFs on hotel websites, differences between hotel categories were also considered. The results of the web analysis show the benefit that could be achieved from the low prevalence of certain VPFs in the Swiss hotel market. The majority of hotels provide primarily text and pictures on their websites. While 3D formats are a key focus in the literature on virtual experience, they are not used all that often in practice. This suggests that their potential has not yet been recognized by Swiss hoteliers or that they are seen as having a downside too. Similarly, videos are not used that often on hotel websites. Videos and 3D presentation formats tend to be used by higher-end hotels. With reference to these two VPFs, the web analysis makes clear that there is potential for differentiation from other hotel websites. Specifically, these two VPFs can enhance brand awareness, image and confidence in a hotel.

The study fills part of a research gap on virtual experience by highlighting the benefit of VPFs for providers in a service context. Furthermore, practitioners from the hotel industry are shown potential for differentiating themselves from the competition using certain VPFs and thus enhancing certain benefit components. The ultimate aim is that the results of the studies will lead to a better understanding of VPFs in the context of virtual experience, so that these can be used effectively by providers, enabling the potential for benefits to be leveraged.

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