The role of social media as a distribution channel for promoting pricing strategies

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Abstract

Purpose – The purpose of this paper is to investigate how using social media (SM) as a tool to influence demand motivates the distribution of different price promotion strategies to encourage consumers to utilize direct bookings, along with how this impacts revenue strategies and profitability.

Design/methodology/approach – This study surveyed hotel executives who hold managerial positions and revenue managers with a direct influence on pricing decisions and developed multiple regression analysis models for various pricing approaches.

Findings – This study confirms the relationship between distribution channels and dynamic pricing strategies, although the same is not true with respect to traditional pricing techniques. The authors found that the adoption of SM as a strategic tool provides a platform to promote tactical revenue management strategies and to practice differential pricing motives.

Originality/value – The findings of the study will help hotel revenue managers to take into account a new way of thinking – namely, an interactive response to consumers' preferences to improve profitability, based on different pricing methods distributed through SM. In this context, SM has elevated pricing strategies to a new and particularly challenging level.

Keywords Distribution channels, Social media, Willingness-to-pay, Revenue management, Dynamic pricing, Cost-plus pricing

Paper type Research paper

Introduction

The rise of e-commerce has provided a variety of potential new distribution channels (DC) that hotels can embrace to influence consumer behavior. These technological advances have enhanced pricing transparency, consumer behavior and the travel experience (Anderson, 2012). They have increased the use of DC and, as a result, real-time pricing updates and consumer responses. Nowadays, social media (SM) platforms such as Twitter and Facebook are widely used to promote hotel products. This presents a competitive advantage; however, it also requires hotel revenue managers to determine their consumers' adoption of SM.

SM platforms play an important role in hosting consumer-generated content, initiated by online hotel information searches (Xiang and Gretzel, 2010; Leung *et al.*, 2013; Kim *et al.*, 2015), due to the immediacy of sharing real-time information (Jansen *et al.*, 2009). Modern consumers are savvy and more aware of hotel promotions and unique sale opportunities, which enables them to compare prices before making a purchase or wait and speculate on lower prices. For this reason, experts have identified consumer retention as a key challenge for hotels (Cross *et al.*, 2009; Hamilton *et al.*, 2016). Establishing trust in services and purchasable products tends to improve awareness and increase revenue (Noone *et al.*, 2011).

Currently, hotels monitor their media presence and outreach through social networks, which, in essence, means that they benchmark the consumer experience against their competition and consider its effect on profitability. Hotels are able to forecast

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consumer preferences via data available from SM, which they can then use to optimize demand (Xiang *et al.*, 2015). This strategic process of demand optimization is a recognized form of revenue management (Boyd and Bilegan, 2003; Talluri and van Ryzin, 2004; Phillips, 2005), which incorporates dynamic pricing (DP) policies and revenue optimization. DP is an approach in which a company sets different prices for the same product across different individual consumers (Talluri and van Ryzin, 2004; Phillips, 2005). For instance, international hotel chains such as Marriott promote deals across their brands by leveraging the power of SM users – i.e. users can access deals promoted exclusively via SM, resulting in additional room sales and a lower budget distribution cost (May, 2013). The ultimate goal is to increase the brand's presence in the market and maximize revenue by offering different prices through various DC.

Despite extensive research on the use of SM from the customer perspective, there is limited research on the use of SM as an immediate DC to employ hotel pricing strategies. This may be due to the difficulty of accessing and establishing affiliations with a specific sampling frame that has a direct influence on pricing decisions. Ultimately, hotels should consider the impact of pricing on shopping searches and develop DP strategies to meet consumer's preferences, as reflected by data distributed via SM platforms. The move to content distribution via SM platforms has the potential to decrease the dependence on online travel agencies (OTAs), which come with negative aspects like contribution fees. It likely would lead to increased direct booking by consumers and allow the hotel chain in question to price more competitively. These strategic pricing decisions can help hospitality institutions to enhance their business effectiveness and profitability. Therefore, further research should seek to ascertain more comprehensively how decision makers might develop these pricing strategies through SM platforms.

This work focuses on hotel executives who hold managerial positions and other employees who have direct authority over revenue management and pricing distribution decisions. We analyze two main determinants for practicing different pricing approaches, using SM as a DC. First, we examine DP policies, wherein the price fluctuates with respect to the demand. These policies might benefit from the use of SM as a DC to allow direct bookings. Second, we explore the shortcomings of traditional pricing techniques (PT) currently employed by a wide range of hotels and their moderating effect on DC. The results of this study confirm the direct relationships between SM, DP and DC. From an applied perspective, hotels should develop consumer-centric strategies in order to offer competitive prices in the market. Further, they should use SM as a tool to influence consumers' behavior and encourage them to book rooms directly from online systems.

The results of this study will help hotel revenue managers to transform their pricing models and consumer outreach, guiding them to more strategic tactical and operational decisions. Different pricing tiers distributed through SM are expected to directly respond to consumer preferences and sell at an equilibrium price, which achieves revenue maximization.

Literature review and hypotheses

Online intermediaries as a platform for distribution channels

Hotels have historically received reservations both directly and indirectly. The role of online DC, which provide indirect bookings, has increased over the last 30 years, during which time global distribution systems (GDS) appeared within the travel industry (Yeoman and McMahon-Beattie, 2011; Vinod, 2011). This technology allowed airlines initially, and later hotels, to control their capacity and, moreover, to act as a repository for the obtained reservations (Phillips, 2005). As technology has evolved, it has become clear that it is effective only when combined and integrated with the company's extant processes of booking optimization (Yeoman and McMahon-Beattie, 2011). The rise of online DC, specifically online travel agents (OTAs), has produced subcategories including online

intermediaries, high-street travel agencies, hotel chains, wholesalers, SM and mobile applications and tour operators. This growth has created additional challenges, as traditional revenue management previously focused on capacity control. In addition, OTAs offer consumers "unprecedented fare visibility" (Phillips, 2005, p. 143) through real-time pricing and capacity availability. In this context, the work of Choi and Kimes (2002) highlights the opportunities and challenges of the application of hotel revenue management strategies to more recently developed internet DC.

Presenting another type of challenge, the use of internet DC frequently includes a direct cost, which tends to be higher than costs for traditional DC like travel agencies and call centers (Green and Lomanno, 2012; Mahmoud, 2015). As a consequence, hotel managers are more concerned with how to maximize hotel room contribution margins (the room selling price less the distribution cost). Since costs vary by DC and target market segment, choosing which channel to use can be a complex decision (O'Connor and Frew, 2004; Helsel and Cullen, 2005); therefore, hotels need to evaluate and optimize all channels to increase revenue per available room (RevPAR). In addition, they must improve the relationships between prices, value and return profit. Vinod (2011) reported the need to change revenue management practices to manage pricing and availability in response to the expanded variety of the DC. Therefore, revenue management initiatives and the applicability of pricing should focus not on what the supplier is willing to accept, but on what the consumer is willing to pay. Since DC are used as points of sale, companies need a multi-channel strategy to reach their entire consumer base.

The use of social media as a distribution channel platform

Today, hotels need to review their distribution portfolios and make strategic use of SM analytics to overcome a dependence on OTAs (Noone *et al.*, 2011; Withiam, 2012) by targeting consumer satisfaction, distribution cost reduction, and revenue improvement (Stangl *et al.*, 2016). In practice, the main objective is to use each DC to generate revenue for the company. As such, the careful choice and input of the DC are important (Choi and Kimes, 2002; Shoemaker *et al.*, 2007).

One of the more interesting features of SM is its influence on consumers' buying patterns, which drives hotel performance (Anderson, 2012). A study by Kim *et al.* (2015) confirmed that the effective use of SM is a positive predictor of hotel performance. As such, using customer-generated data from such platforms provides insights into consumers' needs and desires and thus contributes to the development of targeted pricing strategies. Using revenue management optimization processes, the emphasis shifts to developing prices, forecasting accurately and understanding consumer behavior based on their willingness to pay.

In hotel operations, SM platforms that produce customer content have the potential to impact several critical areas – namely, pricing, customer relationship development and DC management (Noone *et al.*, 2011). Hotels should use SM platforms to stimulate demand, exercising a consumer-centric approach that acknowledges the increasingly important role SM has played as an information source for customers (Xiang and Gretzel, 2010; Kim *et al.*, 2015). This can affect conversion rates between prices and demand and allow revenue managers to identify which prices are being accepted by particular segments and on which dates.

Based on these facts, we believe that SM can help to change these revenue management practices for the better by diversifying a hotel's DC. Therefore, we propose the following hypothesis:

H1. SM usage as a pricing tool positively relates to a hotel's DC.

The relationship between dynamic pricing and distribution channels

Researchers and studies within related literature have long acknowledged the effectiveness of sales promotions in drawing new customers to businesses (Walters and MacKenzie, 1988)

and the result that deeper discounts increase future purchasing behaviors in new customers (Anderson and Simester, 2004). The logic behind pricing decisions can comprise either a static or a dynamic approach. Traditionally, when selling their products, hotels have used a flat pricing policy (static) over a defined booking period. Today, DP has become a common practice sellers use to continuously tailor prices to meet consumers' needs according to their willingness to pay. If a consumer seems price sensitive, for example, then the seller will present them with lower pricing options and pay less than other consumers who are less price sensitive. Therefore, price differentiation or DP, has become a key component of pricing strategies.

From a theoretical standpoint, consumers will purchase a product or service as soon as the price is less than what they are prepared to pay (Talluri and van Ryzin, 2004). Thus, the booking time is an important variable in DP implementation (Bayoumi *et al.*, 2013). The emergence of the internet has provided real-time consumer information and measurements of their purchasing experiences, an advantage to the application of DP. In this and other ways, the internet has changed the way pricing information is distributed. This suggests that hotel companies should evaluate their DC by capturing the associated revenue per transaction and the related incremental costs (Choi and Kimes, 2002); otherwise, their pricing strategy will likely fail to achieve their objectives (Nagle and Holden, 2002). To this end, SM can help companies to establish a presence across various distribution platforms and generate DP.

To what extent A company's level of flexibility in setting prices determines to what extent it has the ability to change prices according to market conditions (Talluri and van Ryzin, 2004). Today, the fierce competition between main hotel stakeholders; the sharing economy that has revolutionized the hospitality industry; and demand volatility have caused challenges within the industry: they have forced hotels to diversify their offerings to consumers and drive bookings through direct DC in an attempt to improve the performance of sales and their marginal revenues while controlling sales costs (Anderson and Xie, 2012; Bodea and Ferguson, 2014). Based on previous findings related to DP, we propose the following hypothesis:

H2. DP positively relates to a hotel's DC.

Because of its unprecedented popularity, SM serves as a new tool that allows hotels to interact with consumers and thus provides hotels and travel companies with the opportunity to gain insights into consumer behavior in a real-time environment using two-way interactions (Lanz *et al.*, 2010). According to Noone *et al.* (2011), consumer data can be used, to some extent, in the managerial decision-making process to inform pricing and promotion decisions, because the data provide insights into what consumers like and what they are willing to pay. To this end, it complements the approach that revenue management follows and that industry players use to try to build a consumer base. Hotels are still developing their SM platforms and mobile strategies and want to be sure that they reduce their dependence on third-party intermediaries, so that they save costs and can control this vital new shopping portal (Starkov, 2013; Green and Lomanno, 2012). Due to the constantly changing environment, companies have exchanged their long-term promotional efforts for short-term tactics. Thus, we propose:

H3. DP exerts influence on the relationship between SM platforms and DC.

The relationship between traditional pricing techniques and distribution channels

To effectively enhance engagement with consumers across a variety of DC, hotels have to choose appropriate strategies to generate the highest occupancy with the highest net average daily rate (ADR) yields, which is the difference between the ADR and any fees

(Hayes and Miller, 2010). In practice, hotels pay a fee or commission, referred to as a distribution cost, to travel agency intermediaries (DC) for every generated booking. Therefore, the hotel's financial performance depends on the effective implementation of its own DC strategy. As the number of consumers' channel choices continues to rise through an increasing range of internet systems, alternative modes of pricing and revenue management optimization have arisen.

However, contrary to expectations, the day-to-day reality of hotel operations has been quite different. Many hotels are beginning to struggle because of the complexity inherent in pricing across multiple channels, as well as the magnitude of these pricing decisions. As a result, they have largely continued to price rooms using traditional approaches like cost-plus pricing, wherein prices are based on cost plus a standard margin (percentage of a fixed amount); market-based pricing, wherein prices are based on that of competitors; customer-centric pricing, wherein prices are based on the customer perception of the value of the service being sold; and bid pricing, wherein the threshold price set by the hotel is compared to the consumer bidding and accepted if it is greater than or equal to the supplier's threshold price (Phillips, 2005). In addition, Phillips (2005) remarks that most companies are not "purists" and that, in practice, they adopt different PT according to the time and the market challenges, in order to maximize their returns. This pricing optimization incorporates the awareness of a consumer's willingness to pay, costs and the competitive environment as key elements:

H4. Traditional PT positively relate to a hotel's DC.

Revenue managers evaluate each DC based on rate conversions, which are determined by predicted demand, the room rate achieved for any reservation, and the open-closed inventory allocation for each channel. This requires an activity-based incremental cost model (Phillips, 2005). It is crucial for hotels to look into optimizing their revenue and returns on investment (ROI). According to this, revenue managers have to manipulate the different DC so that consumers will book a hotel room through a less costly channel. It is more complicated to measure ROI from SM, compared to other types of DC, because of the absence of a direct evaluation model.

Furthermore, the transparency of pricing has increased, mainly due to the influence of SM on constantly changing market characteristics. Currently, consumers are in control, as they choose from where they want to get information and with which brands they want to engage. Consumer retention is a key challenge for hotels (Cross *et al.*, 2009; Hamilton *et al.*, 2016), so gaining consumer feedback and providing a positive experience has become increasingly important. Established trust in services and purchasable products tends to improve consumer awareness and increase revenue (Noone *et al.*, 2011). Therefore, revenue management systems need to manage efficiently their diverse target market segments and tailor their products and pricing strategies to each of these segments through a variety of DC. This consideration led to the development of the following hypothesis:

H5. Traditional PT exerts influence on the relationship between SM and DC.

To examine the correlation between the increasingly vital role of SM and the adaptation of a property's long-term and tactical pricing strategies, we have hypothesized the different types and sets of relationships. Figure 1 illustrates the proposed model.

Methodology

Sample and data collection

To test the hypotheses, we conducted a web-based questionnaire using the Qualtrics software. A total of 170 revenue managers in properties located in different regions – primarily in Europe – were invited by personal e-mail invitation to participate

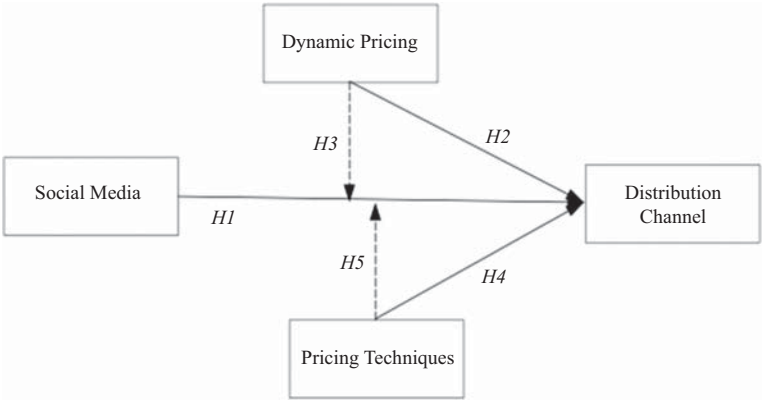

Figure 1.
Hypothesized model of social media use and RM relationships

in this research study. The study focused on hotel executives who hold a managerial position and other employees with direct authority over revenue management and pricing decisions. Due to the difficulty of accessing and establishing affiliations with the specific sampling frame, and in order to recruit these people, data collection involved soliciting participation from industry colleagues who worked in the targeted hotels. Using the snowball referral sampling method, once we exhausted these initial connections, we enlarged the survey by requesting that participants identify other potential participants, utilizing mutual relationships or social networks within the population. In total, 134 questionnaires were returned. We screened the collected data to control for response bias and thus reduce the sampling error. After screening the data, 29 of the returned questionnaires came up as not fully completed, we removed responses that included one or more unanswered sections. A number of respondents replied via e-mail, explaining their refusal to contribute as hesitation to disclose information because of business policies, confidentiality reasons, lack of time, and work pressure. Ultimately, 105 (78.35 percent) questionnaires moved on for further data analysis. Table I presents the demographic characteristics of the respondent sample ($n = 105$).

To control the collected data of the questionnaires received, we conducted a test for nonresponse bias (Babbie, 1990) using the method proposed by Armstrong and Overton (1977). For this, we compared the data on demographic characteristics and property profiles, such as gender, age, hotel category, and revenue management responsibilities, from the first 19 respondents (approximately 18 percent) against those of the last 19 respondents. The results showed that there were no significant differences between the two groups of early and late respondents, with p values exceeding 0.05. These results indicate that the probability of any nonresponse bias was limited.

In this context, the proposed regression equation that allowed us to study these relationships appeared as:

$$\mathrm{DC}_{(\mathrm{DP})} = B_0 + B_1 SM_1 + B_2 DP_2 + B_3 SM.DP_3 + e_1,$$

$$\mathrm{DC}_{(\mathrm{PT})} = B_0 + B_1 SM_1 + B_2 PT_2 + B_3 SM.PT_3 + e_2,$$

where DC = distribution channels; SM = social media; DP = dynamic pricing; PT = traditional pricing techniques; and e = error term factor. The next step was to examine how the execution of a DP strategy based on demand could use SM as a DC, in addition to the extant traditional PT. Following the proposed equations, we conducted a

Demographic characteristics and activities	Frequency	Percent
Gender		
Female	55	52.40
Male	50	47.60
Age (in years)		
18–30	26	24.80
31–40	54	51.40
41–50	19	18.10
51 or older	6	5.70
Education		
Secondary School	6	5.70
College Diploma	12	11.40
Bachelor's Degree	50	47.60
Master's Degree	25	23.80
MBA	11	10.50
PhD or equivalent	1	1.00
Discipline of education		
Business Administration	25	23.80
Hospitality and Tourism	75	71.40
Accounting or Finance	4	3.80
OR/Engineering	1	1.00
Place of residence		
United States	25	23.80
Europe	76	72.40
Asia	4	3.80
Position in hotel property		
Managing Director	15	14.30
Division Director	9	8.60
Department Director	24	22.90
Department Manager	33	31.40
Revenue Manager-Analyst	24	22.90
Years working with the company		
Less than a year	13	12.40
One year	10	9.50
2–5 years	34	32.40
5–10 years	29	27.60
More than 10 years	19	18.10

Note: $n = 105$

Table I. Demographic characteristics of respondents' profiles

hierarchical regression analysis and tested how the use of SM and both dynamic and traditional PT creates relationships with other DC, with dynamic and traditional PT serving as the moderating effects on the relationships between these main variables.

Measures

The revenue managers and executives received a self-administered questionnaire that asked for their perceptions of a range of operational approaches, including questions grouped by variables – namely, SM, DC, both dynamic and traditional PT and links with hotel business performance. All items were assessed on a seven-point Likert-type scale with seven categories, ranging from 1 (strongly disagree) to 7 (strongly agree) or 1 (not at all important) to 7 (extremely important), to indicate the degree of alignment. The questionnaire

was empirically developed and applicable to the day-to-day hotel industry practice, and it determines the relationships between the key elements of revenue management. The questionnaire was piloted using four experienced industry executives, who provided feedback on the survey measurement scales to ensure that they were meaningful, congruent with industry terminology, clear and valid. Based on the results, we modified the questions and the measurement items and carried out a second pre-test with seven revenue managers, including the four initial managers. From their suggestions, we modified some terminology and instructions to participants. This procedure follows the practice suggested by Berthon *et al.* (2004) to evaluate each item and thus ensure that respondents would be able to understand and address each question completely.

We measured the construct PT by asking the respondents to assess the role of key traditional PT used within their pricing strategies, including "cost-based pricing," "inventory-based pricing," "customer-centric pricing," "competitor-based pricing" and "bid pricing" and assessed the importance of the DCby questions such as: "How important are DC to your hotel/chain?" The respondents had to indicate the importance of cooperating with OTAs and other types of online distribution, such as flash sale sites or name-your-own-price selling mechanisms. These questions served as a primary tool for better understanding the allocation of hotel inventory as an integrated perspective of the hotels' revenue management strategies.

Current market conditions can affect overall revenue management strategies, and accordingly, the measurements for the DP construct reflected this. Although the internet has considerably reinforced the way prices are now available, the "flat rate mark-up only" pricing approach is still one of the most popular and continues to be applicable in numerous intermediaries because this approach relies on simplicity to determine the final price. Companies do not rely on any one pricing approach, but instead adjust their pricing approaches according to how they best achieve different goals (Phillips, 2005). Therefore, we requested that respondents determine the usage and impact of DP within their hotels.

In addition, the respondents discussed the anticipated use of SM as part of their hotel pricing strategy. Historically, revenue management has been based on effective inventory distribution and a strong rate base. However, these fundamentals have changed in the age of SM: now, market value drives hotel revenue performance. With that in mind, for many hotels, the use of SM as part of their revenue management pricing strategy remains unconsidered. Therefore, the questions put to the survey respondents help to envision how SM is impacting their hotels' ability to optimize demand, and, moreover, how it impacts revenue management strategies following rapid changes in consumer purchasing behaviors. The respondents also addressed their perceived implementation of SM as part of their pricing strategy. According to the conclusions drawn from analyses of the respondents' replies, hotel revenue managers could use this source of information to study social trends and subsequently make appropriate decisions.

Through the use of the SPSS statistical tool, we performed the descriptive statistics, reliability tests of the scale items, and hierarchical regression analysis for the study.

Results

Data analysis

Table II presents the results of the variables' extraction, in addition to the results of the reliability test for each variable and the corresponding descriptive statistics. For each item, the authors report the mean, the standard deviation (SD), the minimum, and the maximum. The use of descriptive statistics clarifies the variation of each item for the presented data and constructs in this model. In addition, Table II presents the reliability analysis of the consistency of the results obtained (Ryan, 1995; Hair *et al.*, 1998) and the degree to which the items are homogeneous using Cronbach's α coefficient as a measurement index.

Observed variables	Factor loading	*M*	SD
Social media (SM) (Reliability α: 0.854; CR: 0.882; AVE: 0.604)			
How important is the…			
…use of social media as part of your revenue management and pricing strategy to you?	*0.823*	5.02	1.23
…impact of social media on your property performance indicators?	*0.792*	5.04	1.24
…use of social media to your hotel's tactical pricing?	*0.816*	4.61	1.28
…use of social media within the RM strategy to improve the hotel's market share?	*0.851*	4.70	1.28
…commission level to use a distribution channel?	*0.571*	5.80	0.94
Distribution Channels (DC) (Reliability α: 0.709; CR: 0.774; AVE: 0.516)			
How important…			
…are the distribution channels to your hotel/chain?	*0.558*	6.27	0.69
…is it that your hotel is represented on every distribution channel?	*0.691*	5.87	1.03
…are the online travel agencies (OTA) as efficient distribution tool?	*0.526*	6.12	0.94
…are buying sites or flash sales to your hotel/chain?	*0.731*	4.56	1.51
…is it for you to promote through opaque distribution channels, such as Priceline.com?	*0.674*	4.45	1.53
Dynamic Pricing (DP) (Reliability α: 0.869; CR: 0.898; AVE: 0.638)			
Is the implementation and use of dynamic pricing essential to your hotel?	*0.778*	6.34	0.85
Is dynamic pricing a fair sales distribution approach?	*0.853*	6.24	0.77
Does dynamic pricing have a positive influence on the hotel sales volume?	*0.834*	6.30	0.75
Does dynamic pricing create an increase in demand and RevPAR?	*0.738*	6.14	0.83
Has the use of dynamic pricing increased the hotel's market share?	*0.787*	5.87	1.00
Pricing Techniques (PT) (Reliability α: 0.699; CR: 0.772; AVE: 0.520)			
Please indicate the importance of the following essential key pricing approaches			
Cost-based pricing	*0.659*	5.07	1.29
Customer-centric pricing	*0.671*	5.10	1.25
Competitors-based pricing	*0.540*	5.56	1.02
Bid price	*0.825*	4.37	1.57

Notes: $n = 105$. SM, social media; DP, dynamic pricing; DC, distribution channels; PT, pricing techniques. Values in italics indicate the variables that have a higher load factor

Table II. Exploratory factor analysis of social media relationships

The generally agreed-upon lowest level for Cronbach's α value, in order for the findings to be considered reliable, is 0.70 (Nunnally, 1978). In this study, they ranged from 0.699 to 0.869 (Table II), which is greater than the threshold level of 0.70, with only the borderline exception of the PT variable (0.699). This indicates a good level of consistency across the subjects' responses to the constructs.

Table II also reports the composite reliability (CR) in assessing the degree of consistency between multiple measurements of a variable (Hair *et al.*, 1998). The CR for each of the four constructs was between 0.772 to 0.898, all of which exceed 0.70, which is the acceptable cutoff level suggested by Bagozzi and Yi (1991) and Fornell and Larcker (1981). The average variance extracted (AVE) values ranged from 0.516 to 0.638, which exceeds the minimum threshold of 0.50 (Fornell and Larcker, 1981); hence, the measurement model shows good convergent validity.

In addition, to test the strength of the relationships between the variables, a correlation test was employed. The AVE values were higher than the squared inter-construct correlations, which indicates that discriminant validity exists. Discriminant validity can evaluate the measurement model when, as with our study, the AVE in each construct exceeds the square value of the coefficient, in which the correlations are not constrained to unity.

Table III presents the correlation coefficients, means and SD of the variables.

Hypothesis analysis and results

To test the hypothesized relationships, we performed a series of regression analyses with a hierarchical method of entry. According to Hair *et al.* (1998), the multiple regression analysis is the prime way to test hypothesized relationships between a single dependent variable and several independent variables. Therefore, the research followed the procedure proposed by Baron and Kenny (1986) on how to assess the degree and character of the relationships among the variables: evaluating the change in the amount of variance explained (ΔR^2), testing the interaction effects, and conducting an overall incremental F-test of statistical significance (Baron and Kenny, 1986; Hair *et al.*, 1998). The research also employed a test of multicollinearity. The variances inflation factor (VIF) value was less than 6, which indicated that multicollinearity is not a concern in the data (Cohen *et al.*, 2003).

Dynamic pricing and social media

Today, in practice, hotels employ SM to broadcast and disseminate pricing promotions for consumers. Therefore, following the procedure proposed by Baron and Kenny (1986), we introduced the variables hierarchically, based on the first proposed regression equation ($DC_{(DP)}$), to test the relationships between the main variables – namely, SM ($DC_{(DP)}$_Model 1), DP ($DC_{(DP)}$_Model 2), and the interaction between the variables ($DC_{(DP)}$_Model 3). The results of each step are shown in Table IV.

Overall, the model predicts a significant relationship between the tactical components of revenue management that supplement and promote pricing, which includes DC and SM and the DP variance. The results in Table III confirm that promotions through SM positively relate to the DC, with standardized coefficients of $\beta = 0.246$, t-value $= 2.581$, and $p < 0.01$. The results show the value of $F = 6.66$ with a level of significance of $p < 0.01$ ($DC_{(DP)}$_Model 1). Thus, the study results support *H1*.

Over the last ten years, the hotel industry has transitioned from using an inventory model RM approach to more consumer-centric methods (Cross and Dixit, 2005; Anderson and Carroll, 2007), encompassing a shift to the use of DC and incorporating the use of rapid SM communication. This is consistent with the correlative study findings, which might provide higher pricing transparency. Technological innovations like SM provide hotels avenues for two-way, real-time communication with consumers. Although not every hotel has the capacity to dedicate resources to its use or measure how to drive significant promotional messages through specific SM platforms, the availability of SM allows a hotel or chain to interact more directly with the consumer, which then promotes higher hotel performance. As a result, revenue management optimization should be flexible enough to accommodate and to take into account purchasing trends in line with consumer behavior to promote a higher response rate through various SM DC.

H2 proposed that there is a direct positive relationship between DP and the use of DC to promote pricing, with measured standardized coefficients of $\beta = 0.299$, t-value $= 3.232$, and

Construct (factor)	Mean	SD	SM	DC	DP	PR
Social media	4.994	0.992	*0.777*			
Distribution channel	5.453	0.787	0.246*	*0.718*		
Dynamic pricing	6.177	0.687	0.146	0.328**	*0.799*	
Pricing techniques	5.026	0.938	0.342**	0.195*	−0.091	*0.721*

Table III.
Mean, SD and the inter-correlations among the variables

Notes: SD, standard deviation; SM, social media; DC, distribution channels; DP, dynamic pricing; PT, pricing techniques. The italics numbers in the diagonal row are square roots of the average variance extracted (AVE); inter-construct correlation is shown off the diagonal. Squared root of AVEs should exceed the inter-construct correlations for adequate discriminant validity. *$p < 0.05$; **$p < 0.01$

Estimate variables	$DC_{(DP)}$_Model 1 B	SE	β	Hypothesis	$DC_{(DP)}$_Model 2 B	SE	β	Hypothesis	$DC_{(DP)}$_Model 3 B	SE	β	Hypothesis
Intercept	4.477	0.072			2.538	0.704			2.577	0.747		
Social media (SM)	0.196	0.076	0.246**	*H1* (supported)	0.161	0.073	0.203*		0.162	0.074	0.204*	
Dynamic pricing (DP)					0.342	0.106	0.299**	*H2* (supported)	0.335	0.114	0.294**	
SM × DP									−0.012	0.074	−0.016	*H3* (not supported)
R^2	0.061				0.148				0.148			
Adjusted R^2	0.052				0.131				0.123			
ΔR^2	0.000				0.087				0.000			
F-value	6.66**				8.85***				5.85***			

Estimate variables	$DC_{(PT)}$_Model 1 B	SE	β	Hypothesis	$DC_{(PT)}$_Model 2 B	SE	β	Hypothesis
Intercept	4.117	0.482			6.130	1.904		
Social media (SM)	0.161	0.080	0.204*		−0.273	0.406	−0.344	
Pricing techniques (PT)	0.105	0.085	0.126	*H4* (not supported)	−0.312	0.391	−0.371	
Dynamic pricing (DP)								
SM × PT					0.089	0.081	0.862	*H5* (not supported)
R^2	0.075				0.085			
Adjusted R^2	0.057				0.058			
ΔR^2	0.000				0.010			
F-value	4.12**				3.15*			

Notes: *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

Table IV.
Results of hierarchical regression analyses

$p < 0.01$ ($DC_{(DP)}$_Model 2). The results indicate a significant and positive relationship, and thus, we found support for *H2*. From a tactical perspective, DC management and DP are tools of revenue management. These tools are creating a new consumer landscape based on purchasing behaviors, with direct implications for hotel profitability.

To assess the moderating effects of DP on SM, we introduced $DC_{(DP)}$_Model 3. The result in the interaction effects between SM and DP reveals a significant moderating effect model of the relationship between SM usage as a DC and the DP variable, with a value of $F = 5.85$ and a level of significance of $p < 0.001$. Moreover, the Durbin–Watson value is 1.810, so there is no residual correlation. Contrary to our expectations, although the model is significant, the results do not indicate a significant moderating effect of DP on the relationship between SM and DC ($\beta = -0.016$, t-value $= -0.161$). Hotels are using SM to develop a consumer-centric approach, driving sales through the push of competitive prices, as part of a short-term selling strategy. Hence, hotels can leverage the data to encourage competitive pricing on the basis of mutual trust. In our analysis, we found that the growth of SM use has not necessarily improved the trust between the main stakeholders of consumers and hotels as a result of enhancing positive competitive price transparency. Therefore, *H3*, in which we proposed that the implementation of DP moderates the relationship between SM as a DC when it promotes DP, does not appear to be valid.

Traditional pricing techniques and social media

As consumer channel choices continue to expand through an increasing range of internet systems that improve the offered pricing capabilities, alternative modes of pricing and revenue management optimization have arisen (Anderson, 2012). However, we observed that the reality of day-to-day hotel operations has been quite different: many hotels continue to use traditional pricing approaches and DC. In practice, companies are not "purists" (Phillips, 2005), and they adopt different PT according to the time and the market challenges in order to maximize their returns. This pricing optimization incorporates consumer willingness to pay, costs and the competitive environment as key elements.

On the second proposed regression equation ($DC_{(PT)}$) of our research study, we introduced the variables hierarchically to test the relationships, i.e., those between SM and DP as shown $DC_{(PT)}$_Model 1 and the interaction between the variables in $DC_{(PT)}$_Model 2. The results of each step appear in Table IV.

Our results show a significant direct relationship between the use of SM to promote pricing and traditional PT, at the $p < 0.01$ level with a value of $F = 4.115$ ($DC_{(PT)}$_Model 1). The linear relationship between the use of SM promotions and traditional PT on DC is not significant, however, with standardized coefficients of $\beta = 0.126$, t-value $= 1.239$ ($DC_{(PT)}$_Model 1). Hence, we did not find support for *H4*. Although the study results show a positive relationship between SM and traditional PT, the support of SM pricing potential does not impact a hotel's pricing strategy. The drawback of traditional PT is that they base prices strictly on "costs" plus a surcharge (margin), or on how the competition sets up offers. The advantage to the accessibility of prices by consumers does not take into account the capacity to appeal to different consumer segments by offering different prices. Therefore, being able to compute prices without any consideration of a consumer's willingness to pay is a critical challenge and affects the ability of hotels to promote product segmentation. Hence, strategic pricing objectives should focus on the implementation of multi-channel PT in order to yield results that accommodate consumer behavioral trends. While SM usage provides a platform for the implementation of diversified pricing strategies, the potential problems concerning the application thereof is still a common concern.

In $DC_{(PT)}$_Model 2, we assessed the moderating effects of traditional PT on the relationship between SM and DC – that is, how hotels integrate SM as a DC and sales mechanism. The results reveal a significant relationship between the variables at the

$p < 0.05$ level with a value of $F = 3.147$ (Table IV). While SM has a significant, though indirect, relationship on pricing, the traditional PT are based on a "cost" control approach, not on a consumer-centric approach that generates incremental revenue. The results confirm that the use of SM is not provisional on traditional PT, with standardized coefficients of $\beta = 0.862$, t-value $= 1.092$. Thus, the study results also do not support *H5*. Revenue managers have to analyze the data and sources of consumer behavior to make decisions, with the goal to optimize revenue management outputs and to take advantage of SM trends. This real-time, open content transparency that SM enables thus increases the exchange of information about consumer preferences, price qualifications and consumer segmentation fences.

This study results show positive effects on the pricing strategy, which incites hotels to use SM platforms to develop promotions and drive bookings, an important component to reducing incremental distribution costs; however, each hotel still needs to determine independently the best way to implement it.

Discussion and conclusions

This research was conducted based on the perception that the rise of SM may play a role in increasing a hotel's market share by influencing consumer purchasing patterns, which drive hotel performance. It contributes to hotel marketing and revenue management literature by examining the effects of SM as a DC that motivates the implementation of revenue management strategies focused on influencing pricing strategies (DP, PT) as a promotional tool.

Theoretical implications

Unlike prior research that has concentrated on the role of SM in consumer-generated content, real-time information sharing, or online sales that establish trust in services, this study highlights that hotels that use SM to communicate special offers and to develop a promotional pricing strategy are able to drive bookings, which helps to reduce incremental distribution costs and generate incremental revenue. Nowadays, hotels are faced with how efficiently they can broadcast their rates and availability through DC. Hence, the findings of this study support the initial hypothesis regarding the important relationship between SM, pricing strategies, and their favorable effect on distribution. This presents some interesting implications: from a hotel's perspective, the evolution of the internet has brought pricing transparency and has enhanced consumer behavior and the travel experience. It creates a need to implement online pricing strategies as a tool to meet this demand. This could be a direct impact of SM, allowing stakeholders to create an unofficial, strong relationship and ensuring that prices are appropriately matched to consumer expectations to drive revenue generation.

Managerial implications

The results of this study also possess several managerial implications. In practice, they provide significant, if indirect, suggestions for hotel managers. First, the study identified positive statistical relationships between SM and DC, indicating that hotels should concentrate on SM implementation to improve their revenue management targets. This is consistent with the findings of Noone *et al.* (2011). Today, this tendency acknowledges a shift in the practice of revenue management from a strategic to a tactical approach, incorporating strategies like DP, SM, mobile distribution, flash sales and review sites.

Second, hotel managers who use SM as a DC may offer promotions based on a DP approach to impact consumer sensitivity to pricing. Accordingly, a behavioral data analysis reveals a correlation between SM and hotels' conversion rates (Anderson, 2012).

Therefore, SM provides the platform to promote tactical revenue management strategies and to practice differential pricing motives that enhance the hotel's perceived value and develop prices that consumers are willing to pay. Based on this, hotel managers might employ SM to push promotions to specific consumer segments and directly influence the behavioral purchasing patterns, which should show a subsequent impact on bookings, occupancy and revenue.

The study findings indicate that revenue management implementation should focus on adjusting prices in response to demand in a more sophisticated way, based on the shift from strategic to tactical methods and vice versa, as well as on the current environment and market challenges. This pricing optimization incorporates consumer willingness to pay, costs, the competitive environment and extant economic volatility as key elements to explore return maximization. This supports previous findings, which indicate that, in practice, hotels are trending toward adopting different PT (Anderson and Carroll, 2007; Anderson, 2012). From an applied perspective, hotels should develop consumer-centric strategies, push competitive prices and use SM as an important tool to influence consumers to book hotel rooms.

Although the findings of this study confirm a relationship between SM, DP, and DC, our understanding of this relationship is not complete. The results do not indicate a significant moderating effect of DP on the relationship between SM and DC, indicating a lack of support for *H3*. We believe this is mainly because hotels are beginning to struggle, due to the DP complexity and the magnitude of pricing decisions. The basic method to send rates and inventory to an online DC is to manage it directly via an extranet connection, which requires time-consuming manpower. Therefore, the majority of hotels have started to develop and implement direct connectivity systems to ameliorate this manual process; this, however, comes with an incremental cost.

This study also provides the insight that SM does not promote traditional PT (*H4*). More specifically, traditional PT, such as cost-plus pricing or market-based pricing, do not take sufficient advantage of the changing market environment, as they are insensitive to the market's elasticity of demand for hotel products. Hence, our findings confirm that hotel managers face challenges in positioning themselves against competition, since they do not have sufficient information about demand and therefore often overprice or underprice the rooms. The findings are in line with Phillips (2005), who observed that the emergence of a consumer-centric approach in revenue management creates choices in offered pricing capabilities, alternative modes of pricing, and revenue management optimization. Recently, for example, the Hilton chain announced that it is moving forward with a new customer-centric pricing model with a revised cancellation policy, which adjusts their pricing policy based on fully or semi-flexible consumers.

Similarly, our study did not find support for *H5*. This confirms that hotels need an integrated presence across their various DC. Also, in order to determine appropriate pricing, hotels should take a holistic approach on how to recognize a variety of key elements to segment and capture consumer demand.

Finally, this study demonstrates that real-time communication associated with the growth of the online environment creates an important impact. The study confirms that SM has moved the development of pricing strategies to a new level. SM provides a platform to promote tactical revenue management strategies, to practice differential pricing that enhances a hotel's value, and to develop prices that consumers are willing to pay, in line with the work by Anderson (2012) and Sigala *et al.* (2012).

Limitations and future research

The adoption of SM as a strategic tool changes interaction with consumers and impacts demand. Future research will extend this analysis more broadly, as this study suffers from

certain limitations that other studies will want to address. The first one is the small sample size: we reached the respondents through personal contacts in the hospitality sector, and a larger sample size would be better for a more robust analysis. Additionally, this study used a sample composed of hotel executives who hold managerial positions and other employees with direct influence over revenue management and pricing decisions. Therefore, the generalizability of the results is not clear, as it captured these executives' perceptions at a given time.

This is an empirical study, and as such, we empirically developed measurement scales to assess the framework; further scale development could generate higher reliability. Throughout our evaluation, the interaction between the empirical experiences of DC, pricing approaches, and revenue management metrics contributed to our understanding of the consequences of DP strategies within hotels. The results drawn might not be applicable to any other industry. Finally, whether this study is subject-specific or common across hotels needs further identification. Future research should look at SM and pricing strategies according to the type of the hotel, level of service, and location. Despite these limitations, the study findings are informative and can be utilized as a basis for further research, as the importance of consumer-facing technology has led to notable market differentiation.

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