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# Key Factors in Guests' Perception of Hotel Atmosphere

by MORTEN HEIDE and KJELL GRØNHAUG

Attaining a distinctive atmosphere has become a pivotal concern for hospitality managers, since atmosphere is perceived an essential factor to attract and satisfy guests. An exploratory study of 369 hotel guests at six Norwegian hotels identified four stable and robust factors of atmosphere, namely, distinctiveness, hospitability, relaxation, and refinement. Distinctiveness was found to be the main factor in atmosphere; consequently, it is reasonable to assume that a certain degree of distinctiveness is a prerequisite for creating atmosphere. Beyond that, however, hospitability emerged as the main determinant for guest satisfaction, loyalty, and word of mouth. As frequently mentioned by experienced hoteliers, guests tend to be satisfied in hotels with conventional design and simple amenities, provided they are treated in a hospitable and welcoming manner. Thus, managers should avoid focusing on design features to the extent that hospitability suffers. Furthermore, employees have an essential role for ensuring hospitability, and consequently, hotel establishments should not focus solely on the guests' needs but also pay attention to employee training.

**Keywords:** atmosphere; Norwegian hotels; hotel management; hospitality; service; guest satisfaction; measurement

**S**tudies have identified atmosphere as a critical variable for explaining customer satisfaction among hotel guests, regardless of geographical area, nationality of guests, and type of hotel (Troye and Heide 1987). In some cases, the atmosphere is the operation's primary product. A recent study of restaurants, for example, indicates that atmosphere is often perceived by both guests and staff as the single most positive characteristic of the establishment—rated even more important than the food itself (Kokko 2005).

Research in organizational behavior indicates that workplace atmosphere may influence the attitudes and behavior of employees and thus affect service delivery. In the service marketing literature, atmosphere has been viewed in relation to customers and especially discussed as a tool for changing consumers' attitudes

and behavior. Bitner quite rightly points out that atmosphere is more important for service organizations than it is for producers of tangible goods (Bitner 1995). The fact that services are produced and consumed simultaneously, and that this occurs within the physical facilities of the firm, implies that customers will be exposed to the atmosphere of the “production site.” Consequently, this atmosphere will be an important determinant of customer satisfaction.

Though *atmosphere* is commonly invoked, the concept is ambiguous and means different things to those who invoke it. Based on the scientific definition as “the air surrounding a sphere,” the many moods of earth’s atmosphere have caused the term to be applied to the environment or surroundings in any location (Kotler 1973). This implies that the term goes beyond the individual—that is, atmosphere includes some elements of the environment. The individual may well contribute to the atmosphere, but other factors must be present as well. Several studies have examined the use of atmospheric elements (e.g., background features, such as temperature, scent, music, and lighting) to reinforce the desired atmosphere (Babin, Hardesty, and Suter 2003; Baker, Levy, and Grewal 1992; Donovan and Rossiter 1982; Gardner and Siomkos 1986; Milliman 1986; Spangenberg, Crowley, and Henderson 1996; and Wilson 2003). The use of such elements is well known in the hospitality industry. Other studies have focused on social factors as drivers of atmosphere, particularly because interactions are important in the creation of hospitality services—whether among guests or between staff and guests (Martin 1986; Marks 1988). By definition, interaction between actors is also a social phenomenon that is of some importance for atmosphere. Design factors, including functional and aesthetic elements, such as architecture, style, and layout, have also been highlighted as drivers of atmosphere in

hospitality settings (Baraban and Durocher 2001; Lawson 1976; Lawson 1987; Mamalis, Ness, and Bourlakis 2005).

While the effects of atmosphere are recognized by managers and mentioned in virtually all management texts, we have seen little empirical research that fully addresses the role of atmosphere as a management tool. In this regard, atmosphere has relevance only if it generates reactions from the guests that are important for the firm (e.g., guest satisfaction, favorable word of mouth, enhanced loyalty). Hotel companies often make costly investments to manipulate the atmosphere of their establishments. However, any change meant to improve the atmosphere requires adequate measurements to assess whether such efforts pay off. Despite considerable interest in atmosphere among hospitality professionals, we see no targeted survey instruments to assess consumers’ perceptions of atmosphere in hotel settings. Without targeted measurement instruments, it is difficult for companies to get the feedback they require to improve the atmosphere and also difficult to assess how atmosphere influences guests’ attitudes and behavior.

This article describes an attempt to measure the phenomenon of atmosphere as applied in the hotel industry and reports the findings of an exploratory survey in which the measurement instrument was used to examine the relationship between atmosphere and the key outcome variables that we mentioned above.

In the next section, we describe the process of developing an instrument for measuring hotel guests’ perception of atmosphere and testing the measurement instrument in a field survey. After presenting and discussing the empirical findings of this survey, we conclude by highlighting managerial and research implications and proposing avenues for further research.

## Methodology

Because of the concept of atmosphere is vague, we approached it first with an inductive approach and then applied deductive methods. In the inductive phase, we tried to capture the phenomenon empirically by examining how the concept has been applied in the hospitality context through a comprehensive collection of descriptive terms pertaining to hotels. The output of the inductive phase was an inventory of descriptors. In the subsequent deductive phase, we tested the relevance of each of those descriptors and reduced their number so that only the most fundamental descriptors remained. The two phases are described below.

### Inductive Phase: Collection of Atmosphere Descriptors

To ensure that we included all relevant items for atmosphere pertaining to our empirical context, we sought to collect all the words we could find that are applicable to describing hotels' atmosphere, thereby generating an extensive pool of items. This is standard procedure for covering a conceptual domain (Churchill 1979).

After considering several approaches for generating the item pool, we took the following approach: If an adjective is relevant for describing hotel atmosphere, it has most likely been used for that purpose. Consequently, we decided to collect all words that have been used for describing atmosphere in hotel settings. To avoid confusion from mixing different languages, we limited the search to descriptions in English. Using several search engines, we started with an internet search on *hotel* and *atmosphere* in combination, which yielded several million hits. We then searched for adjectives used to describe atmosphere, thereby compiling an inventory of hotel atmosphere descriptors, including all synonyms. We

supplemented the web with descriptors from numerous hotel design books, architectural books, and travel magazines. When we reached a list of six hundred descriptors, we found no more new ones and concluded that the search was exhaustive.

### Deductive Phase: Reduction from Six Hundred to Forty-three Atmosphere Descriptors

In the deductive phase, we assessed and tested the relevance of each descriptor and reduced the number of descriptors to the most fundamental ones. We reduced the 600 descriptors to 458 by employing judgment-based criteria (see Appendix A for details). As part of this process, we consulted two external experts in hospitality design and management (an architect and a hospitality manager). We then tested the 458 descriptors empirically using a three-stage randomized experimental design, in which subjects were shown presentations of a range of hotels and thereafter rated how relevant each descriptor was for describing the hotel's atmosphere on a seven-point Likert scale. In the first stage, the number of descriptors was reduced from 458 to 201. The second stage yielded a further reduction to 135 descriptors. These descriptors were tested in the third stage, which gave the 43 descriptors that were subsequently tested in the exploratory field survey.

### Field Survey

Since this was the first attempt to empirically test the indicators, we conducted an exploratory field study in collaboration with the leading hotel chain in Norway. We selected six of the chain's hotels based on our assessment that the six had diverse atmospheres (see Appendix B for particulars).

*Procedure.* The survey was conducted during a two-month period. During check-in, guests were asked if they were willing to participate in a survey. If so, we collected their e-mail addresses. After the guests had checked out, we sent 559 of them an e-mail invitation with links to the electronic guest survey questionnaire (Norwegian or English, according to the respondent's choice). Translation was done with the utmost care by using available language expertise and dictionary sources. The descriptors loaded on the same four factors both for Norwegian and foreign guests, which suggests that semantic content was not altered in the translation process. An electronic system was used for data recording and handling. We offered the hotel chain's standard incentive for customer surveys, entry in a drawing for a free weekend for two persons.

*Respondents.* We received responses from 369 of the guests whom we invited to participate (yielding a response rate of 66 percent, which we consider satisfactory). Experts in the hotel chain verified that the composition of the sample (gender, nationality, age, guest type) corresponded to the typical guest population of the particular hotels. Forty percent of respondents were on a business trip, 25 percent were attending a course or conference, 27 percent were visiting in connection with leisure or tourism, and 8 percent traveled for various other reasons. Nearly two-thirds (63 percent) were employed in the private sector, 25 percent in the public sector, and the remainder reported other types of employer (8 percent) or did not work (4 percent). The median age range was forty to forty-nine. Just over three-quarters of respondents (77 percent) were Norwegian.

*Measurements.* The electronic questionnaire consisted of three sections. The first

section comprised items designed to measure overall guest satisfaction, loyalty, and word of mouth. These items were measured on a seven-point Likert scale, in accordance with recommendations from a number of earlier hospitality studies (Bowen and Chen 2001; Choi and Chu 2001; Kim, Han, and Lee 2001; Kozak 2003; Mattila 2001; Skogland and Siguaw 2004).

The main section of the questionnaire asked respondents to indicate their assessment of the relevance of each of the forty-three descriptors for describing the atmosphere of the hotel. The response scale used was based on previous studies with alternatives ranging from 1 = *not at all descriptive* to 7 = *extremely descriptive* (Aaker 1997; Schall 2003). In addition, respondents were asked to indicate how much atmosphere the hotel had overall and compared to other hotels in the same price range. Respondents were also given the opportunity to provide open comments regarding the hotel's atmosphere.

The third section consisted of questions about the respondent (demographics, employment, travel habits, and familiarity with the hotel). These questions were based on the well-tested format that the hotel chain uses for its regular guest surveys in all of its hotels.

### Findings: Operational Measures

We started out with exploratory factor analyses of the forty-three descriptors. Exhibit 1 reports the output from the four-factor solution chosen, based on principal component extraction and varimax rotation (Lewis 1984). To choose the cut-off point, we inspected the scree plot, which showed that a substantial dip followed the fourth factor. The first four factors were easy to interpret, had eigenvalues considerably greater than one, and explained

**Exhibit 1:**

## Factor Analysis—Four-Factor Solution

<i>Descriptor</i>	$h^2$	<i>Distinctiveness</i>	<i>Hospitability</i>	<i>Relaxation</i>	<i>Refinement</i>
Special	0.81	<u>0.82</u>	0.30	0.15	0.14
Fascinating	0.75	<u>0.79</u>	0.29	0.13	0.13
Different	0.69	<u>0.79</u>	0.15	0.20	-0.01
Unusual	0.73	<u>0.78</u>	0.19	0.27	-0.06
One of a kind	0.74	<u>0.74</u>	0.38	0.14	0.14
Memorable	0.69	<u>0.73</u>	0.29	0.20	0.20
Rarefied	0.69	<u>0.72</u>	0.31	0.25	0.09
Peculiar	0.59	<u>0.71</u>	0.17	0.12	-0.21
Seductive	0.74	<u>0.70</u>	0.39	0.29	0.13
Characteristic	0.66	<u>0.70</u>	0.36	0.06	0.18
Attractive	0.71	<u>0.70</u>	0.45	0.01	0.13
Dream	0.69	<u>0.69</u>	0.30	0.29	0.21
Charming	0.69	<u>0.68</u>	0.35	0.21	0.25
Welcoming	0.81	0.12	<u>0.87</u>	0.08	0.15
Hospitable	0.73	0.20	<u>0.82</u>	0.16	-0.01
Professional	0.75	0.27	<u>0.81</u>	0.03	0.13
Genial	0.73	0.23	<u>0.81</u>	0.16	0.05
Communicating	0.69	0.14	<u>0.79</u>	0.21	0.05
Effective	0.65	0.20	<u>0.75</u>	0.09	0.19
Civilized	0.60	0.32	<u>0.68</u>	-0.02	0.19
True	0.69	0.42	<u>0.68</u>	0.19	0.13
Feel-good	0.70	0.47	<u>0.68</u>	0.12	0.06
Flexible	0.57	0.25	<u>0.64</u>	0.19	0.24
Serious	0.54	0.36	<u>0.64</u>	0.01	0.03
Well-being	0.68	0.43	<u>0.63</u>	0.27	0.15
Pastoral	0.65	0.19	-0.03	<u>0.78</u>	0.01
Resort	0.67	0.38	0.13	<u>0.71</u>	0.00
Holiday	0.63	0.45	0.21	<u>0.61</u>	-0.05
Family-like	0.56	0.37	0.19	<u>0.60</u>	-0.13
Serene	0.69	0.48	0.31	<u>0.60</u>	0.07
Quiet	0.52	0.39	0.18	<u>0.58</u>	0.07
Easy	0.48	0.13	0.32	<u>0.53</u>	0.27
Suburban	0.30	-0.16	0.03	<u>0.51</u>	0.12
Simple	0.35	-0.34	0.00	<u>0.48</u>	-0.02
Classical	0.73	0.18	0.28	0.05	<u>0.78</u>
Traditional	0.64	-0.12	0.15	0.21	<u>0.75</u>
Historical	0.64	0.49	0.06	-0.09	<u>0.62</u>
Upper class	0.70	0.54	0.18	-0.08	<u>0.61</u>
Rich	0.67	0.59	0.29	0.04	<u>0.48</u>
Luxurious	0.66	0.61	0.31	0.03	<u>0.44</u>
Modern	0.42	0.26	0.33	0.40	-0.30
Tranquil	0.55	0.41	0.47	0.39	0.11
Great location	0.34	0.42	0.27	-0.22	0.20
Eigenvalues		18.94	3.40	3.10	2.07
Percentage of variance		44.03	7.90	7.20	4.82

**Note:** Descriptors are underlined where the factors have high loadings. The choice of varimax rotation and order of presentation of the descriptors is intended to improve clarity and ease of reading. In the questionnaire, the descriptors were presented in random order. Varimax rotation means that the orthogonal factors are extracted successively according to variance in the original indicators accounted for. The communalities,  $h^2$ , are also shown. Communality is the proportion of a variable's total variation that is explained by the four factors combined.

most of the variance in the forty-three descriptors, while adding additional factors marginally increased explained variance. The four-factor structure remained robust when we tested it with other extraction and rotation methods. This factor solution was also the most stable and robust when tested in subsample factor analyses (e.g., split half samples, males vs. females, younger vs. older respondents).

As shown in Exhibit 1, we have labeled the first factor *distinctiveness*, based on high loadings on such descriptors as *special*, *fascinating*, and *different*. We infer that the loading on this factor means that a hotel will be rated high on atmosphere if it has features that differentiate it from other establishments. That is, hotels rated for their atmosphere have a certain distinctiveness that sets them apart from the herd. The second factor we labeled *hospitality* (loaded mainly on such descriptors as *welcoming*, *hospitable*, and *professional*). We think that high ratings for this factor stem chiefly from social factors (particularly, staff–guest interactions). The third factor, which we termed *relaxation*, has high loadings on descriptors such as *pastoral*, *resort*, and *holiday*. Finally, because the fourth factor loaded on descriptors like *classical*, *traditional*, and *upper class*, we labeled it *refinement*.

We tested various measurement models based on the four-factor structure (Heide, Grønhaug, and Laerdal, 2008; Heide and Grønhaug 2008). For instance, we used the mean of five items to create a scale for each of the four factors, with the results of this twenty-item model presented in Exhibit 2. We calculated a single mean score for each scale score based on the means for the five items in that scale. So, for instance, we used the following five items to measure the first factor, distinctiveness: *special*, *different*, *rarefied*, *seductive*, and *charming*. We assessed the reliability of this and the other three

scales using Chronbach's  $\alpha$ . As a rule, Carmines and Zeller (1979) suggest that Chronbach's  $\alpha$  should not be lower than .80 for widely used scales. As shown in Exhibit 2, Chronbach's  $\alpha$  exceeded the .80 requirement for the all four factors by a clear margin.

As a final test of validity, we note that in general, the items have stronger correlations with other items that load on the same factor than with the other items. Based on our assessment, we can conclude that the measurement model appears adequate in terms of reliability as well as convergent and discriminant validity (John and Reve 1992).

### Analysis of Key Outcome Variables in Relation to the Atmosphere Scales

To examine the relationship between guests' perception of atmosphere as measured by the four scales and their assessments of key outcome variables, we conducted several stepwise regression analyses. Multiple regression analysis was used because it allows us to take into account the explanatory power of more than one independent variable at a time. In stepwise regression, independent variables are entered according to their ability to explain variance in the dependent variable. That is, variables are included one at a time and are removed from the model if it turns out that addition of another variable renders the original one nonsignificant. Exhibit 3 presents the results when we tested the four factors (i.e., distinctiveness, hospitality, relaxation, and refinement) against the following four dependent variables: overall atmosphere, overall guest satisfaction, guest loyalty, and word of mouth.

*Overall atmosphere.* The first analysis tested guests' overall assessment of the hotel's atmosphere as the dependent variable. As shown in analysis 1, distinctiveness entered as the main explanatory

**Exhibit 2:** Operational Measures—Reliability and Convergent and Discriminant Validity

Item	Intercorrelation																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1 Special	1.00																			
2 Different	<b>0.77</b>	1.00																		
3 Rarefied	<b>0.80</b>	<b>0.70</b>	1.00																	
4 Seductive	<b>0.79</b>	<b>0.62</b>	<b>0.80</b>	1.00																
5 Charming	0.41	0.26	0.38	0.48	1.00															
6 Welcoming	0.48	0.36	0.44	0.50	0.50	1.00														
7 Hospitable	0.52	0.35	0.47	0.49	0.53	<b>0.75</b>	1.00													
8 Professional	0.55	0.42	0.52	0.57	0.58	<b>0.74</b>	<b>0.78</b>	1.00												
9 Genial	0.41	0.32	0.43	0.46	0.42	<b>0.71</b>	<b>0.71</b>	<b>0.66</b>	1.00											
10 Communicating	0.25	0.27	0.33	0.33	0.30	0.11	0.19	0.07	0.19	0.25	1.00									
11 Pastoral	0.41	0.39	0.47	0.54	0.43	0.26	0.32	0.26	0.34	0.33	<b>0.68</b>	1.00								
12 Resort	0.49	0.43	0.51	0.58	0.51	0.32	0.41	0.31	0.42	0.37	<b>0.59</b>	<b>0.67</b>	1.00							
13 Holiday	0.44	0.39	0.42	0.48	0.45	0.30	0.39	0.29	0.35	0.32	<b>0.57</b>	<b>0.63</b>	<b>0.67</b>	1.00						
14 Family-like	0.55	0.49	0.58	0.61	0.60	0.42	0.47	0.40	0.50	0.45	<b>0.55</b>	<b>0.68</b>	<b>0.61</b>	<b>0.52</b>	1.00					
15 Serene	0.36	0.22	0.30	0.35	0.41	0.35	0.27	0.33	0.33	0.27	0.03	0.15	0.14	0.08	0.24	1.00				
16 Classical	0.50	0.36	0.44	0.41	0.53	0.29	0.21	0.29	0.24	0.17	0.02	0.14	0.18	0.10	0.31	<b>0.53</b>	1.00			
17 Historical	0.54	0.35	0.47	0.51	0.55	0.31	0.24	0.38	0.28	0.22	0.03	0.22	0.21	0.16	0.28	<b>0.56</b>	<b>0.59</b>	1.00		
18 Upper class	0.61	0.53	0.53	0.61	0.55	0.36	0.35	0.39	0.39	0.35	0.16	0.30	0.37	0.27	0.39	<b>0.52</b>	<b>0.48</b>	<b>0.66</b>	1.00	
19 Rich	0.61	0.44	0.53	0.59	0.58	0.44	0.36	0.52	0.39	0.33	0.13	0.38	0.34	0.30	0.45	<b>0.46</b>	<b>0.53</b>	<b>0.79</b>	<b>0.65</b>	1.00
20 Luxurious																				

Bold values are intercorrelations with the other indicators that belong to the same scale.



**Exhibit 3:**Explanatory Power of the Atmosphere Scales—Results of Regression Analyses (Standardized  $\beta$ )

Independent Variable	Dependent Variable			
	Analysis 1 Overall Atmosphere	Analysis 2 Guest Satisfaction	Analysis 3 Revisit Likelihood	Analysis 4 Recommend Hotel
Distinctiveness	0.487***	0.177**	0.163**	0.237***
Hospitability	0.269***	0.499***	0.425***	0.407***
Refinement	0.188***	—	—	—
Relaxation	—	—	—	0.126*
Total explained variance (adjusted $R^2$ )	0.664 (66.4%)	0.380 (38.0%)	0.284 (28.4%)	0.426 (42.6%)

Note: Dash = not significant.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

variable, with an effect coefficient of 0.487 ( $t$  value 10.603,  $p < .001$ ). The second variable, in terms of explanatory power, was hospitability, and the third significant variable was refinement. These three variables combined explained two-thirds of the variance across the six hotels. It is interesting to note that when separate regression analyses were performed for each hotel, refinement had high effect coefficients both for hotel 1 (the deluxe, full-service hotel) and hotel 4 (the basic, limited-service hotel). We must note that these are the two extremes in terms of refinement, given that hotel 1 had the highest mean score on the refinement scale and hotel 4 scored the lowest. We conclude that the level of refinement is a key characteristic of the overall atmosphere in these two hotels.

*Overall guest satisfaction.* The second analysis tested the effects of the factors on "Overall satisfaction with the hotel" as the dependent variable (with response alternatives ranging from 1 = *extremely dissatisfied* to 7 = *extremely satisfied*). In this case,

as shown in Exhibit 3, hospitability was found to be the most important explanatory variable, with an effect coefficient of 0.499 ( $t$  value 9.722,  $p < .001$ ). Thus, the most important determinant for guest satisfaction is whether guests consider the hotel to be hospitable. Distinctiveness entered as the second explanatory variable (effect coefficient of 0.177,  $t$  value 3.453,  $p < .01$ ). We conclude, then, that while distinctiveness is important, the key factor for guest satisfaction is hospitability. Indeed, in separate regression analyses for each hotel, hospitability entered as the main explanatory variable for all six hotels.

*Guest loyalty.* Our measurement of guest loyalty was the likelihood of choosing the same hotel on a return visit. Once again, as shown in analysis 3, hospitability emerged as the most crucial variable. Only for hotel 5 did distinctiveness enter as the main explanatory variable, most probably due to the remarkable architecture of this hotel.

*Word of mouth.* Respondents were asked to indicate their willingness to recommend the hotel to friends and family.

This item was used as the dependent variable in analysis number 4. As reflected in the right-hand column of Exhibit 3, hospitable atmosphere was the main explanatory variable, followed by distinctiveness. Also here, the importance of hospitability was confirmed when running separate regression analyses for each hotel.

## Discussion

Although atmosphere is frequently emphasized as a tool for creating positive guest experiences, the concept is vague and difficult to measure—and, consequently, challenging to manage. We believe that the information reported in this article is a first step toward developing a measurement instrument. After further testing, validation, and refinement, the elements of this instrument could be used in guest surveys.

Given the reliability and validity of the measurement scales we used, it should indeed be possible to measure a hotel's atmosphere using the four factors that we identified here. Distinctiveness was the most important variable in explaining overall atmosphere, while hospitability emerged as the key variable for explaining guest satisfaction, loyalty, and willingness to recommend the hotel to others. Although relaxation and refinement were elements in overall atmosphere, it seems reasonable that managers should focus on distinctiveness and hospitability.

Considering that this was the first field test of the atmosphere indicators, the study should be regarded as preliminary and exploratory. Consequently, care should be taken when interpreting the results. Nevertheless, our findings do appear to have at least two important implications. First, based on the factor analyses and the first regression analysis, it is reasonable to assume that a certain degree of distinctiveness is a prerequisite for creating a hotel's

atmosphere. Thus, in efforts to improve the atmosphere of their establishments, managers should build on the elements that make their place special. This could be natural features, such as a special location, or design elements—usually, architecture and décor. As discussed earlier, atmospherics and social factors could be used consciously to reinforce the effects of these elements. In an increasingly competitive industry, it is essential to produce new and innovative ideas to differentiate a hospitality company from others (Taylor 1997). The differences might be so modest that one might wonder whether consumers will consider them as adding distinctive value. In cases where there are few functional differences, distinctive “added value” needs to be specifically created to ensure efficient differentiation (Ehrenberg et al. 2002). Based on our findings, we would argue that there is need for further research to investigate the role of atmosphere for creating such “added value” in hospitality settings, especially in view of the next implication about the importance of hospitability.

The second important implication is that while distinctiveness is important for creating an exceptional hotel atmosphere, it does not necessarily guarantee guest satisfaction, loyalty, or positive word of mouth. As we have seen, hospitability appears to be an important variable in this regard—indeed, the main attribute for hotels. As frequently mentioned by experienced hoteliers, guests will be satisfied in hotels with moderate design and simple amenities, provided they are treated in a hospitable and welcoming manner. Thus, managers should avoid focusing on design features to the extent that hospitability suffers. In this regard, one area that requires more study is the role of employees in these hotel attributes. Employees are central in the creation of atmosphere, and they

are essential to hospitality. It seems evident that more insights are needed into the role of staff development. Of particular relevance in this context is the service–profit chain, which argues that strong business performance is the result of a mirror effect between employee and customer satisfaction (Heskett et al. 1994). Based on this argument, there are reasons to believe that genuine hospitality can be achieved only if guests are met by motivated, loyal, and satisfied staff. Consequently, efforts to improve the atmosphere of hospitality establishments should not solely focus on the guests' needs but also pay attention to employee training. The service–profit chain suggests that achieving service profits and growth goals begins with taking care of those who take care of customers (Kotler, Bowen, and Makens 2006).

Adequate measurement is a prerequisite for management. We believe that a quantitative instrument to measure guests' perception of atmosphere, as presented here, could be a useful diagnostic tool for market research and management. Given the considerable interest and the presumed value of atmosphere as an intangible asset, there are a number of areas where such a targeted measurement instrument would be useful.

The instrument could be employed to assess the extent to which the atmosphere of a particular establishment differs from that of its competitors and whether the atmosphere offered satisfies the demand of the target market segment. Being involved in atmosphere measurement could also help the manager to improve his or her professional judgment and reduce the risk of ill-considered investments, based on feelings more than facts. The measurement instrument would be useful in identifying gaps (e.g., areas where staff

members' perceptions of the atmosphere differ from those of guests) and for measuring the effect of various interventions (e.g., investments to improve the atmosphere or training programs to enhance hospitality). The instrument could also be used for testing how effectively different types of promotional material can communicate the salient aspects of the establishment's atmosphere to potential customers.

As mentioned, the work reported in this article should be seen as a first step toward developing a measuring instrument for guests' perception of hotels' atmosphere. To further test, validate, and refine the instrument, analyses need to be done with new data. This study drew data only from guests in Norway. While we see no reason to think that these guests are exceptional in their responses, further testing should be expanded geographically (to other countries and continents) and also to other parts of the hospitality industry (for example, to explore the role of atmosphere in restaurant settings). In our opinion, interest in atmosphere in other industries (such as retailing) indicates that there is potential for modifying the instrument for targeted use in areas beyond the hospitality sector.

Our quantitative approach may also benefit from being supplemented by qualitative studies. For example, qualitative techniques may yield a deeper understanding as to why different aspects of atmosphere are important and influence guests' evaluations and decisions, and why and how atmosphere is viewed differently in different situations. In addition to the insights obtained by applying our quantitative measurement (as discussed above), such knowledge may further contribute to improved management of atmosphere.

## Appendix A

### Detailed Description of the Deductive Phase of the Study

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As mentioned, the purpose of the deductive phase was to test the relevance of each descriptor and reduce the number in order to remain with the most fundamental ones.

#### Judgment-based Reduction (from 600 to 458 Atmosphere Descriptors)

Each descriptor was critically assessed in relation to the following criteria: (1) Combined descriptors: Terms that combined several descriptors were simplified. For example, the term *good old-fashioned atmosphere* was reduced to *old-fashioned atmosphere*. (2) Location-specific descriptors: Terms that were relevant only for specific places were not considered suitable for identifying general dimension and were consequently deleted. For example, the term *Sorrento atmosphere* has relevance only for the city of Sorrento, Italy, and was therefore excluded. (3) Context-specific descriptors: Terms that were strictly context specific were deleted, as these were not considered particularly relevant for general atmosphere dimensions. Examples include *Sultan Ahmed atmosphere*. (4) Vapid descriptors: Adjectives that gave little information about the quality or type of atmosphere (for example, *fine atmosphere*) were deleted. (5) Obscure descriptors: The same applied to descriptors with unclear meaning (such as *principal atmosphere*).

#### Empirically Based Reduction (from 458 to 43 Atmosphere Descriptors)

Due to the labor-intensive and meticulous task of testing the 458 descriptors, we were advised by hospitality experts to avoid using actual hotel guests in this early part of the work. We thus decided to use student subjects instead. A three-stage randomized experimental design was employed.

#### *First Stage (Reduction from 458 to 201 Descriptors)*

Subjects were shown a ten-minute presentation of a hotel randomly selected from a total of six presentations ( $N = 78$ , 80 percent female, mean age = 23.5, undergraduate students specializing in hotel and tourism management at a leading university in Norway). The hotels included facilities arguably low in atmosphere (such as a Motel 6 in Idaho) and truly atmospheric establishments like a tranquil countryside hotel in England and the exclusive Burj Al Arab Hotel in Dubai. The presentation was followed by a questionnaire asking about the subjects' demographic information and their assessments of the hotel, including the extent to which they believed that the hotel had a characteristic atmosphere. The last part of the questionnaire consisted of a randomly selected quarter of the 458 descriptors (i.e., four versions of the questionnaire were used). This decision was based on a pretest of respondent burden). The subjects were asked to rate how relevant each descriptor was for describing the hotel's atmosphere. Based on previous studies, a seven-point Likert-type scale was used, ranging from 1 = *not at all descriptive* to 7 = *extremely descriptive*. The procedure was repeated twice, so that each subject rated three randomly assigned hotels, each followed by a questionnaire (i.e., 78 subjects  $\times$  3 questionnaires = 234 observations).

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## Appendix A (continued)

*Manipulation check.* The degree to which the hotels were assessed as having a characteristic atmosphere was as expected, with Motel 6 having the lowest mean score and Burj Al Arab the highest. Analysis of variance indicated a highly significant difference in scores among the six hotels,  $F(5, 228) = 66.46, p < .001$ .

*Outcome.* The low number of ratings for each descriptor-hotel combination (less than ten on average) represented an obstacle to using multivariate analysis in the first stage. To isolate the most relevant indicators, descriptors that were not among the top 50 most relevant descriptors for any hotel (which amounted to 257 descriptors) were removed, leaving 201 (458 – 257) for further testing. Consequently, the outcome of the first stage was a reduction in the number of descriptors from 458 to 201.

### *Second Stage (Reduction from 201 to 135 Descriptors)*

This stage employed a different sample from the same student population ( $N = 77, 82$  percent female, mean age = 24.0) to yield a further reduction to 135 descriptors. A total of six new hotel presentations were used, representing a broad range of hotels (difference in perceived atmosphere was confirmed by the same type of manipulation check as in the first stage). The procedure was identical to the first phase except that only two versions of the questionnaire were used (i.e., subjects rated the relevance of a randomly selected half of the 201 descriptors, with 101 descriptors in the first version of the questionnaire and 100 in the second). The significantly higher number of ratings for each descriptor-hotel combination allowed for a more refined set of criteria to be employed. It was decided to retain descriptors that (1) discriminated between hotels, (2) explained whether the hotel was perceived as having a characteristic atmosphere, and (3) had high relevance for at least one hotel (i.e., high mean score).

The rationale for including the first criterion (discrimination) is that the ability to discriminate is a fundamental property of measurement instruments. Analyses of variance identified a total of twenty-one variables with substantial ( $F > 25$ ) discriminatory power. These include descriptors like *airy* and *idyllic*, which are highly relevant for some hotels and not relevant for others.

The rationale for including the second criterion (characteristic atmosphere) was to test the descriptors in relation to a key criterion variable. Separate regression analyses were performed for each version of the questionnaire, where the extent to which the hotel was perceived as having a characteristic atmosphere was used as dependent variable and the various descriptors were tested as explanatory variables. There was a total of ten significant explanatory descriptors ( $p < .05$ ) in the first version of the questionnaire, and these variables combined explained more than 75 percent of the variation in the dependent variable (adjusted  $R^2 = .762$ ). In the second version of the questionnaire, there were also ten significant explanatory descriptors, with slightly higher combined explanatory power (adjusted  $R^2 = .775$ ).

The third criterion (relevance) is the same pragmatic criterion that was used in the first stage. To avoid too many descriptors being kept for further testing, the cut-off point was set at forty. That is, according to this criterion, any descriptor needed to be among the forty most relevant for at least one of the hotels to be retained.

Based on these tests, we eliminated 66 descriptors that failed to meet any of the three above-mentioned criteria. A total of 135 descriptors met at least one of the

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## Appendix A (continued)

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criteria (several of these satisfied more than one criterion) and were consequently kept for further testing.

The use of a factor analytic approach was ruled out in the second stage because of the fairly low ratio of number of observations to variables. We had 77 subjects  $\times$  3 questionnaires = 231 observations further divided by two versions of the questionnaire, which meant that there were on average 115.5 observations to test the 100 or 101 descriptors in each version, representing a ratio of 1.15. We considered this to be inadequate for factor analysis.

As is common in most countries, the majority of students who specialize in hospitality management and tourism are female. However, we decided to use this group because their particular interest and expertise in the topic being researched was considered to outweigh the potential problem of gender and subject bias. To check for a possible gender effect, analyses of variance were performed for each of the 201 descriptors, with gender and hotel as independent variables. While almost all variance was driven by hotel, gender had a significant main effect ( $p < .05$ ) on 13 of the 201 descriptors. This is most likely mainly due to random effects (expected random number =  $201 \times 0.05 = 10.05$ ). However, to rule out possible biasing effects, it was decided to employ a more heterogenic sample in the third and final stage.

### *Third Stage (Reduction from to 135 to 43 Descriptors)*

To improve gender balance in the third sample, students from several male-dominated areas were included (namely, accounting, information technology, petroleum technology, engineering, and chemistry). This was also done to increase the heterogeneity of the sample and thus reduce any possible bias from particular disciplines of study ( $N = 278$ , 59 percent female, mean age = 23).

Each subject rated three randomly assigned hotels (from a total of twelve, i.e., the six from the first stage and the six from second). After each presentation, subjects completed a questionnaire as in the earlier stages, except that this time there was only one version of the questionnaire, which included the 135 descriptors under scrutiny. The considerably higher number of observations for each descriptor compared to the earlier stages enabled a factor analytic approach. The number of observations (i.e., 278 subjects  $\times$  3 questionnaires = 834 observations) was considered adequate for using a factor analytic approach on the 135 descriptors, since the ratio of observations to descriptors was 6.2.

Different factor models and descriptors were tested by confirmatory factor analysis using LISREL. To avoid "throwing the baby out with the bath water" (i.e., accidentally deleting descriptors that might be relevant for testing in the field), we decided on the most elaborate model with acceptable fit (root mean square error of approximation = 0.050). In addition to the descriptors included in this model, six additional descriptors that came out as significant explanatory variables in the regression analysis were also kept. In all, forty-three descriptors were retained in the inventory and subsequently tested in the exploratory field survey.

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## Appendix B

### The Six Hotels Participating in the Field Study

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#### Hotel 1

This is a deluxe, full-service hotel, centrally located in Norway's capital between the parliament building and the Royal Palace and within walking distance of the main shopping and cultural areas, as well as its sights. Opened in 1874, the hotel is one of the best-known hotels in the country. Prices are upper range and the hotel caters mainly to high-class business travelers.

#### Hotel 2

This is one of the most unusual hotels in the chain, located next to a famous amusement park and zoo in the southern part of the country. Motifs and effects from the animal kingdom are a main feature of the rooms and communal areas. In summer, the hotel is geared toward families with young children. Outside the summer season, the hotel mainly focuses on the course and conference market.

#### Hotel 3

The hotel is situated next to the market, set among charming old timber houses in a southern coastal town that has the most days of sunshine per year of any part in Norway. The hotel has a high standard of service and a particular southern, maritime feel. There is a variety of restaurants and entertainment available just a short walk away from the hotel.

#### Hotel 4

This is a standard business and conference hotel located in the outskirts of the capital. The hotel is basic but functional. Public transport is within walking distance, and the airport bus stops five minutes away from the hotel on its way to and from the main airport.

#### Hotel 5

Located in the northwestern part of the country, this hotel has been called Norway's most complete and flexible hotel for culture and conferences. The hotel is designed to look like a huge sail, and the rooms have a superb view of the nearby fjord and surrounding mountains.

#### Hotel 6

This hotel is surrounded by mountain terrain. In winter, there is skiing for all abilities, while the water, wide-open spaces, and mountains make it an ideal place for hiking, riding, and fishing in summer. The hotel is a popular venue for courses and conferences.

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