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# DIFFERENTIATIONS BETWEEN EXPECTED AND PERCEIVED INTERACTIVITY IN HOTEL WEBSITES

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## Abstract

*The uniqueness of the web lies in its interactivity. Interactivity refers to the reciprocity provided by a site during the process of using it and it has been positioned conceptually as a process, a function and a perception. Implemented appropriately may affect the success or failure of commercial websites. Perceived interactivity should be based on consumers' actual interactions with the stimulus and means that consumers have perceived control over information and communication flow. Expected interactivity is the extent of interactivity that a person expects to experience during a prospective interaction with a medium. The paper explores the differentiations between consumers' expected interactivity towards the web, and their perceived interactivity of hotel websites. The top25 hotel websites are used for the analysis. A group of users rate both expected interactivity towards the web and perceived interactivity of the hotel websites. Recently developed scales of perceived interactivity are used, which emphasize response time, communication, control, responsiveness and personalization issues. A comparison of expected with perceived interactivity is performed. The findings indicate that the hotel web sites are informative and perform fast but they provide less control than expected, while provide primarily one-way and no concurrent communication.*

*Keywords: Interactivity, Expected Interactivity, Perceived Interactivity, top hotel websites.*

# 1 INTRODUCTION

The total online shopping population in 2002 was 66 millions and is projected to double by 2007 (Nua Internet Surveys, 2002 [in Wong and Law, 2005]). This growing Internet population offers great online business opportunities (Chen and Yen, 2004). Furthermore lodging will be one of the fastest growth areas from a value of a \$9 billion in 2003 to \$17 billion in 2007. It is projected that the Internet will play a role in more than half of all hotel bookings in the coming years (Wong and Law, 2005).

However an important factor affecting the success or failure of commercial websites is the nature of interface design. Newhagen and Rafaeli (1996) claimed that interactivity when implemented appropriately is instrumental in differentiating between successful and failing websites. Furthermore, interactivity is an assumed attribute of interpersonal communication (Wu, 1999) and the level of interactivity is one of the most important design elements (Auger, 2005). Haubl and Trifts (2000 p.5) highlighted the uniqueness of online shopping environments is that “they allow for the implementation of very high degrees of interactivity”. Chen and Yen (2004) claimed that online interactivity is becoming a valuable way of improving the communication quality of business websites. Research has also shown that interactivity engages users (Dysart, 1998; Chen and Yen, 2004). Adding interactivity to a site may improve user satisfaction (Rafaeli, 1988), increase in site visibility (Chen and Sockel, 2001), increase performance quality (Schaffer and Hannafin, 1986; Szuprowicz, 1996), is time saving (Cross and Smith, 1996) and leads to better acceptance (Coupey, 1996). Moreover, interactive websites may cause more information processing, higher favourability towards the product and the website and greater flow state intensity (Sisilia et al., 2005). As far as hospitality industry is concerned, Christou (2003) claimed that interacting with customers and satisfying customers’ needs are vitally important while Sigala (2003) stated that hoteliers heavily collect guest information by observing and interacting with guests and then store data into books and other files.

Interactivity is a multidimensional term that has different meanings for different purposes (Gustavsen and Tilley, 2003). “Interactive technologies are necessary, but not sufficient for consumers to be active and interactive. Although interactivity is almost assumed to be the inherent and defining characteristic of the web, it is perceived interactivity by consumers of a website, not its actual interactivity enabled by interactive technologies, that offer critical information for web marketing”, claimed Wu (1999, p.3). Expected interactivity is the extent of interactivity that a person expects to experience during a prospective interaction with a medium. The study looks at how consumers’ prior expectations of interactivity of the web differentiate their perception of the interactivity of hotel websites. This paper attempts to: a) Measure interactivity as a multidimensional issue. For this reason it incorporates several scales proposed by scholars to measure different aspects of interactivity emphasizing communication and operational characteristics, b) Compare perceived to expected interactivity. The paper is based on the idea that measuring hotel websites interactivity alone by using several scales is not necessarily informative by itself. Only compared to expected interactivity could provide information of the relative status of interactivity of the hotel web sites. For example a low rating of perceived interactivity should not be considered low if the rating of expected interactivity is also considered low, c) Use a sample of hotel websites and describe the big picture of interactivity use. Previous studies evaluate just a few web pages.

# 2 INTERACTIVITY

The concept of interactivity has been variously defined from different perspectives. The first view is that of characteristics of the medium of a website (Jensen, 1998; Lombard and Snyder-Dutch, 2001; McMillan, 2000; Sohn et al., 2003). Definitions that focus on features seek to identify either general characteristics like two-way communication or specific characteristics of websites such as search engines (McMillan and Hwang, 2002). The second approach defines interactivity focusing on process

(Ha and James, 1998; Heeter, 2000; Miles, 1992; Pavlik, 1998; Rafaeli, 1988). From the process perspective, definitions focus on activities such as interchange and responsiveness (McMillan and Hwang, 2002). Lee (2000) proposed that interactivity should not be measured by analyzing processes or by counting features. This is the last approach that defines interactivity as a users' subjective perception (Sohn et al., 2003; Wu, 1999; Wu, 2000).

## **2.1 Definitions that focus on features**

From this point of view, one often cited definition is that of Jensen (1998, p: 201) "a measure of a media's potential ability to let the user exert an influence on the content and/or form of the mediated communication". The key elements of interactivity according to Jensen (1998) and Lombard and Snyder-Dutch (2001) are the features that enable user control. In the same vein another approach is that of McMillan (2000) where the key elements are the features that facilitate two-way communication and control. Ahren et al. (2000) concentrated also on features that enable two-way communication as well as on the multimedia features of the websites. For Novak et al. (2000) the key element is the time required for interaction. Straubhaar and LaRose (1996, p.12) mentioned "We will use the term interactivity to refer to situations where real-time feedback is collected". According to Aoki (2000) the time dimension concerns person-to-person interaction and is distinguished in asynchronous or synchronous and she claimed that the degree of interactivity "may be measured by the number of tools presented in a website, the bandwidth each tools requires, the immediacy of responses, and the degree of personalization or customization".

## **2.2 Definitions that focus on process**

The second approach defines interactivity focusing on process. Bezjing-Avery et al. (1998 p.23) proposed, "In interactive systems, a customer controls the content of the interaction requesting or giving information". Cho and Leckenby (1999) also focused on interchange between individuals and advertisers. Ha and James (1998), Miles (1992) and Rafaeli (1988) concentrated on responsiveness. Ha and James (1998, p.461) mentioned "Interactivity should be defined in terms of the extent to which the communicator and the audience respond to, or are willing to facilitate, each others' communication needs". Pavlik (1998) concentrated on the process of two-way communication and Heeter (2000) on action and reaction. Heeter (2000) defined: "An interaction is an episode or series of episodes of physical actions and reactions of an embodied human with the world, including the environment and objects and beings in the world. These actions and reactions are actual interactions, a subset of the range of potential interactions of the human and the world at that time and place. Another approach is that of Steuer (1992 p.84), who took into consideration real-time participation and mentioned "Interactivity is the extent to which users can participate in modifying the form and content of a mediated environment in real time".

## **2.3 Definitions that focus on perceptions**

The last approach, defines interactivity as a users' subjective perception (Sohn et al., 2003). It was Newhagen et al. (1996) who proposed the concept of perceived interactivity. McMillan (2002: p. 162), highlighted "Interactivity means different things to different people in different contexts" and Reeves and Nass (1996, p.253) noted, "Perceptions are far more influential than reality defined more objectively". Perceived interactivity lies at the centre of various interactions between consumers and advertisers, consumers and messages and among consumers themselves (Wu, 1999). "Even though definitions and dimensions of interactivity differ across previous studies, perceived interactivity should be based on consumers' actual interactions with the stimulus. Interaction with the website means that consumers have perceived control over information and communication flow. Therefore a

website, which can allow consumers to seek and gain access to the information on demand where the content and sequence of consumers' surfing is under their own direct control, can be perceived to give greater interactivity to consumers while they are surfing" (Chung and Zhao, 2004). All these suggest that a distinction should be made between how people perceive interactivity subjectively and how it can be measured objectively. Focusing on perception, the key elements are consumer involvement (Day, 1998), consumers' clicking behaviours (Chung and Zhao, 2004), consumer's choice to interact (Schumann et al., 2001), simulation of interpersonal communication (Kiousis, 1999) and interaction by self and others (Newhagen et al., 1996).

## **2.4 Dimensions of Interactivity**

Several researchers have attempted to define interactivity as a multidimensional concept. Laurel (1990) defined interactivity as a concept based on three dimensions – frequency, range and significance. In a similar approach, Steuer (1992) conceptualized interactivity based on three elements: speed, range and mapping – facilitating users' manipulation of contents. Mok (1996) [in Gustavsen and Tilley (2003)] refers to four Cs of interactive design: control, consistency, context and collaboration. Ha and James (1998) claimed that the aspects of interactivity are clustered around five items: playfulness, choice, connectedness, information collection and reciprocal communication. A six-dimensional definition of interactivity developed by Heeter (1989) includes: complexity of choice available, effort that the user must exert, responsiveness to the user, ease of adding information, facilitation of interpersonal communication. Hanssen et al. (1996) came up with a three dimensional definition of interactivity including, equality, responsiveness and functional communicative environment. Downes and McMillan (2000) used a qualitative approach to identify six interactivity dimensions: direction of communication, timing flexibility, sense of place, level of control and responsiveness and the perceived purpose of communication. Dholakia et al. (2000) gave six criteria for online interactivity: user control, personalization, responsiveness, connectedness, real time interaction and playfulness. Based on a functional approach Coyle and Thorson (2001) identified mapping, speed and user control as three important dimensions of website interactivity.

Regarding perceived interactivity Newhagen et al. (1996) conceptualised perceived interactivity based on efficacy, which is "a two-dimensional construct: internally based self-efficacy and externally based system efficacy". Internally based efficacy can be translated into the user's perceived control over where he is and where he is going, while externally-based efficacy can be rendered into his sense of how responsive the web as a system is to his actions. In a word, according to this approach perceived interactivity can be defined as a two-component construct consisting of navigation and responsiveness. Another noteworthy work is that of McMillan and Hwang (2002). They defined the concept of perceived interactivity in a way that encompasses all the known dimensions of interactivity. They used a 18-item scale including: Enables two way communication, enables concurrent communication, non-concurrent communication, is interactive, primarily one-way communication, is Interpersonal, enables conversation, loads fast, loads slow, operates at high speed, variety of content, keeps my attention, easy to find my way through the site, unmanageable, doesn't keep my attention, passive, immediate answers to questions, lacks content. And proposed three dimensions of perceived interactivity: direction of communication, user control and time. In a similar vein Wu (2000) pointed out three underlying dimensions: perceived control, perceived responsiveness and perceived personalization. Finally, Sohn and Lee (2005) based on the work of Wu (2000) proposed three composite variables of perceived interactivity: Control, responsiveness and Interaction efficacy.

## **3 EXPECTED INTERACTIVITY**

Expectation is defined as one's subjective belief in the probability that a certain kind of behaviour will lead to a particular outcome (Sohn et al., 2003) and is a fundamental concept explaining human

decision-making and behaviour like the process of attitude, the behavioural-intention formation, and the expected utility theory for choice problems (Fishbein and Ajzen, 1975; Savage, 1954; Von Neumann and Morgenstern, 1944). Sohn et al. (2003) based on Van Leuven's (1981) attempt to apply "expectancy theory", originally developed by Vroom (1964) to audiences' decision-making process for media/message selection, proposed that "It is necessary to distinguish the web as a medium from websites as a specific media/vehicles that contains messages, and then to consider the relationship between consumers' expectations towards the web as a medium and their perception of messages that come from their interaction experiences with websites. From this medium-message distinction, we can develop two different levels of the interactivity concept – consumers' expected interactivity towards the web, and their perceived interactivity of actual websites" Sohn et al. (2003, p.7). In this way they defined expected interactivity as "the extent of interactivity that a person expects to experience during a prospective interaction with a medium".

## 4 METHODOLOGY

This paper is oriented to measure people's perceptions of the interactivity of hotel websites and also to differentiate expected versus perceived interactivity. For this purpose eighty-three university students were assigned the project of rating interactivity. University students are appropriate to use in this experiment. Young and college students represent a significant proportion of the Internet population. According to FIND/SVP [in Wu, 1999], 42% of Internet users hold college degrees and 30% of the Internet population fall between ages 18-29. Also more recent studies suggest that users age 15-24 compose 85% of Internet users in Europe. Also across geographic regions, a basic profile of the "typical" Internet user takes shape. Internet users worldwide are more likely to be male, educated and affluent. They tend to be between 18 and 35 years old and use the Internet from home more often than other locations (The VeriSign Domain Name Registrant Profile. Available at: <http://www.verisign.com/static/003301.pdf>).

At first the students rated the expected interactivity towards the web by completing a questionnaire that uses both McMillan and Hwang's (2002) and Wu's (2000) scales adjusted to measure expected interactivity (see the scales items in Tables 1 and 2 respectively). Wu's (2000) scale is a nine-item scale which reflects the multi dimensional nature of perceived interactivity such as perceived control, responsiveness and personalization (Changal, 2005; Jee and Lee, 2002). According to Changal (2005), McMillan and Hwang's (2002) scale is considered a useful tool because its ability to measure three different components of perceived interactivity viz. "real time conversation", "no-delay", and "engaging". Then the students were randomly allocated to visit the top 25 hotel brand web sites. Each student was allocated to visit three sites. The 25 top-brands according to Lodging Hospitality (March, 2004) were selected for analysis because literature suggests that major international hotel chains and big hotels are most active on the web (O' Connor 2003; Chung & Law, 2003; Zafiroopoulos et al., 2005; Zafiroopoulos et al., 2006). In order for the students to have a good picture of the interactivity of the sites, certain tasks were assigned to them: creating accounts, finding out about prices, locating certain hotels, signing in to newsletters, finding out about rooms availability, looking for offers, asking for hotel catalogues, sending emails to hotel about certain queries, asking last minute information, locating hotels with certain amenities, asking information about group stays, completing application forms about new programs offered, finding vocation packages, using communication forms, sending comments, making virtual tours, registering to the hotels, shopping. Relative literature suggests that assigning tasks to users and then recording their attitudes is a way of measuring web performance especially usability (Battleon et al., 2001; McMullen, 2001). The tasks were chosen after extended discussion with a group of seven faculty members and practitioners who had knowledge of e-commerce and also had some previous experience in navigating and using the particular sites. Then the students were given a second questionnaire that used both McMillan and Hwang (2002) and Wu (2000) scales to measure perceived interactivity. In this way the differences between expected and

perceived interactivity could be calculated. The analysis followed resembles the original analysis followed in the cornerstone approach of Parasuraman et al. (1985) who introduced the use of SERVQUAL. What this paper attempts is to compare expected with perceived interactivity by calculating their differences and also to find out which are the issues that differentiate expected interactivity towards the web from the interactivity in the hotel web sites. Paired samples t-tests are used. Then a Principal Components Analysis with Varimax Rotation produces the dimensions of differentiation.

## 5 FINDINGS

### 5.1 The interactivity scales

Table 1 presents the items introduced by McMillan and Hwang (2002). Paired samples t-tests help to distinguish which are the issues that differentiate between expected and perceived interactivity. According to the users, hotel websites do not enable neither two way communication nor concurrent communication to the degree that it is expected, that is the degree that the Internet should perform according to the users' experience. In fact users believe that hotel websites enable primarily one-way communication. Hotel websites are considered to serve as a means of displaying information to the audience but primarily in a static way without enabling two ways communication with potential customers. One more item of this scale differentiates its values between expected and perceived interactivity. Hotel websites are considered to load fast. In conclusion it should be noticed that the hotel websites seems to be behind only in the item of two ways and concurrent communication.

Table 2 presents the items introduced by Wu (2000). Wu (2000) distinguishes three main components: perceived control, responsiveness and personalization. Above all, paired samples t-tests prove that it is the responsiveness that differentiates significantly. Although the hotel websites have the ability to respond to users' specific questions quickly and efficiently, they lack in offering real time communication with other customers or answering to customers' queries directly. This is a peculiarity of the hotel web sites since they do replay to the customers' queries but generally they do not have a real time response. Regarding control of the sites, users feel that they have less control of their navigation when they visit the hotel websites. On the other hand, users perceive that the hotel websites are more sensitive to their needs for products information. In conclusion, hotel websites are considered very informative, but still they are considered not to be flexible while they do not provide real time response or links to customers' communities and chat.

**Table 1. T-test statistics (paired samples) for McMillan and Hwang's scale.**

Items	Mean of Expected Interactivity	Mean of Perceived Interactivity	Differences (E-P)	t	p
Enables two way communication	3.53	3.03	.50	2.96	.007
Enables concurrent communication	3.88	3.46	.42	2.66	.013
Non-concurrent communication	2.12	2.70	-.58	-2.59	.016
Is interactive	3.48	3.80	-.32	-1.87	.073
Primarily one-way communication	2.38	3.34	-.96	-3.74	.001
Is Interpersonal	2.91	3.29	-.37	-1.74	.095
Enables conversation	4.03	3.73	.30	1.61	.118
Loads fast	3.11	3.53	-.42	-2.02	.054
Loads slow	2.84	2.24	.60	2.26	.033
Operates at high speed	3.26	3.61	-.34	-1.47	.153
Variety of content	3.88	3.88	.00	.00	1.000

Keeps my attention	3.57	3.69	-.11	-.46	.649
Easy to find my way through the site	3.30	3.76	-.46	-2	.056
Unmanageable	2.23	2.19	.038	.22	.824
Doesn't keep my attention	2.23	2.46	-.23	-.88	.387
Passive	2.92	2.76	.15	.81	.425
Immediate answers to questions	3.23	3.73	-.50	-1.69	.102
Lacks content	2.53	2.46	.07	.26	.791

(a: 5 points Likert scale used: 1 strongly disagree, 5 strongly agree)

**Table 2. T-test statistics (paired samples) for Wu's scale<sup>a</sup>.**

Items	Mean of Expected Interactivity	Mean of Perceived Interactivity	Differences (E-P)	t	p
I was in control of my navigation through this web site	4.07	3.46	.61	3.68	.001
I was in control over the content of this Website that I wanted to see	3.84	3.76	.07	.34	.731
I was in control over the pace of my visit to this Website	3.72	3.88	-.16	-.84	.405
I could communicate with the company directly for further questions about the company or its products if I wanted to	3.84	3.38	.46	2.06	.049
The site had the ability to respond to my specific questions quickly and efficiently	2.72	3.68	-.96	-3.86	.001
I could communicate in real time with other customers who shared my interest in this product category	3.84	3.15	.69	4.21	.000
Interacting with this site is like having a conversation with a sociable, knowledgeable and warm representative from the company	3.30	3.46	-.15	-.64	.527
I felt as if this Web site talked back to me while I was navigating	3.50	3.76	-.26	-1.89	.070
I perceive the Web site to be sensitive to my needs for product information	2.42	4	-1.57	-6.86	.000

(a: 5 points Likert scale used: 1 strongly disagree, 5 strongly agree)

## 5.2 Dimensions of differentiation

Principal Components Analysis with Varimax Rotation is used to produce the dimensions of differentiation. All the items from both McMillan and Hwang's (2002) scale and Wu's (2000) scale are used jointly in the analysis. The differences between expected and perceived interactivity were the data for the analysis. PCA produced four meaningful components, which jointly attribute to the 60.85% of the total variance. Each component is named according to its factor loadings. Table 3 presents the components and the factor loadings produced after PCA. For interpretation reasons the mean differences are adopted from Tables 1 and 2 and are presented here. Statistically significant differences according to paired sample t-tests ( $p < .05$ ) are discussed. In this way the components serve to summarize and form components of differentiation while significant differences help to precisely locate which are the issues that differentiate perceived hotel website interactivity from expected web interactivity. According to factor loadings:

Principal component 1 is about communication direction and real time response. It explains 23.64% of the total variance. The items that differentiate significantly originate from the McMillan and



Hwang's scale. Commenting on the significant differentiations, it becomes apparent that hotel web sites are considered to load fast but they do enable neither two way nor concurrent communication.

Principal component 2 summarizes navigation and content items. It explains 15.71% of the total variance. It is interesting to notice that according to t-tests there exist no significantly different differentiations to any of the items. Within the context of this specific experiment, there is no difference between expected and perceived interactivity regarding navigation and content.

Principal component 3 summarizes control and efficacy items. It explains 11.83% of the total variance. Though the component is about control and efficacy, there are only two items that differentiate significantly between expected and perceived interactivity. Users believe that they have less control navigating through hotel web sites while at the same time they feel that navigating through them is a one-way communication.

Principal component 4 summarizes items about Responsiveness and Personalization. It explains 9.67% of the total variance. Users believe that although the hotel websites are more informative and reply quickly, they exercise however non-concurrent communication.

**Table 3. Dimensions of differentiation.**

Principal Component 1: "Communication Direction - Real Time Response", Variance explained=23.64, Cronbach's alpha=0.763

Items	Factor loadings	Means difference (E-P)	p
Interacting with this site is like having a conversation with a sociable, knowledgeable and warm representative from the company	.831	-.15	-
Loads slow	-.815	.60	*
Loads fast	.782	-.42	-
Enables two way communication	.735	.50	*
Enables concurrent communication	-.718	.42	*
Operates at high speed	.704	-.34	-

Principal Component 2: "Navigation-Content", Variance explained=15.71, Cronbach's alpha=0.727

Items	Factor loadings	Means difference (E-P)	p
Lacks content	-.805	.07	-
Easy to find my way through the site	.803	-.46	-
Passive	-.720	.15	-
Keeps my attention	.713	-.11	-
Unmanageable	-.611	.03	-
Immediate answers to questions	.559	-.50	-
Doesn't keep my attention	-.543	-.23	-

Principal Component 3: "Control-Interactivity-Efficacy", Variance explained=11.83, Cronbach's alpha=0.678

Items	Factor loadings	Means difference (E-P)	p
I was in control of my navigation through this web site	.776	.61	*
Variety of content	.772	.00	-
I was in control over the pace of my visit to this Website	.644	-.16	-
Is Interpersonal	-.614	-.37	-
Is interactive	-.563	-.32	-
Primarily one-way communication	.465	-.96	*

Principal Component 4: “Responsiveness - Personalization”, *Variance explained=9.67, Cronbach’s alpha=0.658*

Items	Factor loadings	Means difference (E-P)	p
The site had the ability to respond to my specific questions quickly and efficiently	.827	-.96	*
I could communicate in real time with other customers who shared my interest in this product category	.685	.69	-
Non-concurrent communication	-.683	-.58	*
I could communicate with the company directly for further questions about the company or its products if I wanted to	.559	.46	-
I was in control over the content of this Website that I wanted to see	-.515	.07	-
Enables conversation	-.504	.30	-
I perceive the Web site to be sensitive to my needs for product information	-.453	-1.57	-
I felt as if this Web site talked back to me while I was navigating	.390	-.26	*

(\*:  $p < .05$ )

## 6 DISCUSSION AND CONCLUSIONS

Expected interactivity is a critical concept making perception-technology interaction a continuous or evolutionary process. In order to exploit the dynamics of online interactions it is necessary to examine carefully which factors affect consumers’ perception of interactivity under what conditions, and how. Information intensive products would require even greater levels of interactivity because of the inherent difficulties of accurately describing the attributes of these products online. This paper attempted to measure expected interactivity towards the Web and compare it to the perceived interactivity of actual hotel websites. There are only few research works that attempt to measure perceived interactivity and there are even less regarding hotel websites interactivity. This paper strived to apply some of the latest improvements of interactivity measurement to hotel websites. It used several dimensions taking into consideration both communication and operational issues. In addition, it compared hotel websites perceived interactivity with expected interactivity towards the web. The paper is based on the idea that measuring hotel websites interactivity alone is not sufficient. Only comparison with the current status of web interactivity could provide some clues on how hotel websites perform. For this reason it reported the findings of an experiment designed to record both expected attitudes and perceived attitudes, using scales that give emphasis to both communication and operational issues of the sites. By looking the differences in expected interactivity and perceived interactivity of actual hotel websites, hotel businesses would be able to make better business decisions regarding the inclusion of interactivity and develop websites that effectively use interactivity. This paper tried to the big picture of the interactivity status for the hotel companies’ websites by studying a range of 25 websites from the hospitality industry. Regarding the findings, hotel websites provide fast good information in general and on demand, but they do not do it using real time response. Hence they perform primarily one way and non-concurrent communication. Also they do not allow for the users to communicate with other customers and share opinions. Hotel websites do not include high interactivity features such as chat rooms, bulletin boards enhanced navigation bars and seem to be less flexible that expected. Reservation systems are the only features that enable two way communication and concurrent communication. A minority of hotel websites sell products online.

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