Contactless Service Provision in the Hospitality Sector and the Effects of the COVID-19 Pandemic on Brazilian Consumer Behavior

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Abstract

This study aims to evaluate factors related to Brazilian consumer behavior that may influence the use of contactless technologies in the hospitality sector. It also assesses the possible impacts of the COVID-19 pandemic on the behavioral trends presented by participants. The study is quantitative in nature and data collection was carried out through an online survey (n=299). In this initial phase of the research, exploratory factor analysis of the data and Pearson's correlation test were performed. Four constructs were investigated: Readiness, Sociability, Attitude and COVID-19. The results showed the centrality of consumer readiness as a key determinant of favorable attitudes toward contactless technologies in the hospitality sector. This study offers important theoretical contributions to the understanding of technology adoption in hospitality services.

Key Words *Contactless Technologies, Consumer Readiness, Consumer Attitude, Sociability, Hospitality Services, Covid-19.*

Track *Technological Human-Centered Innovations*

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Introduction

The service sector plays a key role in the economic and social development of many countries due to its strong potential for job and income generation (Veríssimo & Saiani, 2019). Its impact extends across various social spheres, as services drive the production-consumption cycle essential to economic functioning (Silva et al., 2020). In Brazil, for instance, services accounted for 70% of the GDP in 2022, reflecting their resilience despite the 7.8% decline during the Covid-19 pandemic (Malar, 2022).

A defining feature of services is their intangibility and reliance on direct interpersonal interactions. Shier et al. (2018) highlight that service environments foster frequent interactions among employees and customers. Such human contact, often absent in sectors like industry, creates a competitive advantage (Solnet et al., 2019). Consequently, service outcomes can vary according to how these interactions unfold, given the human factor's influence on production and delivery (Kowalik & Klimecka-Tatar, 2018).

However, recent years have seen increasing automation in services, reshaping traditional customer-provider relationships. Businesses now adopt automated models to boost efficiency in both operations and customer experience delivery (Bolton et al., 2018). Examples include ATMs, supermarket self-checkouts, and airport check-in kiosks, reducing the human presence within the servicescape (Bitner, 1992)—a global trend.

The Covid-19 pandemic accelerated this 'contactless-ness wave,' as health restrictions forced service companies to minimize physical interactions (Wang et al., 2021). Technologies adopted during this period, such as virtual teaching tools, telemedicine platforms, and proximity-based payment systems, remain in use today (Mukherjee et al., 2021). Yet, in certain segments like leisure, tourism, gastronomy, and hospitality, consumer resistance to contactless models persists.

In these 'hospitality services,' interpersonal contact remains central to shaping the customer experience (Chang, Way & Cheng, 2018). Camargo (2021) notes that consumers still expect human interaction in these contexts. This is particularly relevant in Brazil, where there is a marked preference for high-touch services (Silva et al., 2022). Therefore, this study aims to examine factors in Brazilian consumer behavior that influence the adoption of contactless technologies in the accommodation sector—such as robots and self-service kiosks—and to assess the pandemic's impact on these behavioral trends.

Theoretical Framework

Attitude and Readiness for Contactless Technologies in Accommodation Services

The adoption of contactless technologies in accommodation services began in the 1980s. Many tools now common in hotels—such as remote check-in, proximity payments, facial recognition, and keyless access—were available long before the Covid-19 pandemic (Wroten, 2020). A survey by Oracle Hospitality (2021), involving 1,050 professionals across seven countries, revealed that 47% of hotel, casino, and cruise operators already offered contactless technologies before the pandemic.

In Brazil, the first reported adoption dates back to the early 1990s, when Arco Hotels in Minas Gerais implemented key cards for room access, enhancing operational control and guest convenience (Hotel News, 2010). According to López, Silva, and Silva (2021), even before 2020, the Brazilian hotel industry was moving towards large-scale adoption of these technologies, a shift accelerated by the pandemic. Between May and July 2020, technological innovations helped hotels comply with biosafety protocols and remain operational.

The pandemic also altered guest behavior, increasing demand for low-contact services (Jiang & Wen, 2020). Contactless tools provided both a sense of safety and psychological comfort (Li et al., 2021), critical for hotel recovery as occupancy rates plummeted due to uncertainty around the virus. Zhong et al. (2022) highlight that minimizing physical contact reshaped customer perceptions and behavior towards hotel technologies.

Among widely adopted tools in Brazil are online check-in/out, digital keys, QR codes, and automated cleaning services (López, Silva & Silva, 2021). Bertola (2023) notes the growing role of robots, introduced primarily to enhance customer experience (Saul, 2021). Robots now perform tasks as reliably as humans (McCartney & McCartney, 2020), reducing service failures (Pillai et al., 2021).

However, not all consumers welcome fully contactless hotel services. Factors like privacy, perceived benefits, robot appearance, and expectations of the hotel experience influence acceptance (Lin & Mattila, 2021). Bertola (2023) stresses that simplicity and functionality are key to customer acceptance.

Hao et al. (2022) found that Chinese hotel guests were willing to pay more for contactless room access, though this willingness was lower for features like smart devices, contactless reception, and service robots—perceived by some as cost-cutting measures rather than value-adding services. Finally, contactless services have been shown to boost guest trust, satisfaction, and booking intentions (Kim, Li & So, 2022; Hao & Chon, 2021). Hernández (2021) emphasizes that ongoing use of such technologies is essential for guest safety and connectivity, while Christou, Simillidou, and Stylianou (2020) predict that continued adoption will align with technological advances and evolving consumer expectations.

Sociability and the Adoption of Contactless Technologies in the Hotel Sector

In addition to technological advances and health issues related to the Covid-19 pandemic, contactless services attract consumers with a lower predisposition to social interactions. This inclination is explained by sociability, a psychological trait present in all individuals (Cheek & Buss, 1981), influenced by factors such as personality, social context and physical environment (Gifford & Gallagher, 1985). Sociability affects behavior in different contexts, including consumption (Felix et al., 2024; Silva, 2016).

In face-to-face consumption, sociability can influence the purchasing decision, since interactions with other consumers and employees are almost inevitable (Argo, 2020). Thus, the degree of sociability can encourage or inhibit the completion of the purchase. In technology-mediated contexts, sociability also moderates consumer behavior (Zhang et al., 2019). According to Li and Huang (2022), in contactless services, individuals with lower sociability tend to prefer them, as they act as social support, encouraging consumption, such as when traveling (Leith, 2020).

During the Covid-19 pandemic, social distancing was essential to avoid contagion (Hao & Chon, 2021). To maintain this distancing, consumers began to adopt contactless technologies (Rahimizhian & Irani, 2021), especially in hospitality, where they ensured safety and health (Morosan & DeFranco, 2021). For example, automated check-in has reduced the perception of social interaction, increasing booking intent (Shin & Kang, 2020).

Gursoy and Chi (2020) point out that social distancing has been one of the hotel industry's main strategies during the pandemic, reinforcing the importance of studies on the effects of these measures on consumer behavior. The authors report that 70.42% of guests considered contactless technologies relevant because they minimize human contact. Even so, as the consumption of accommodation usually involves some level of physical contact, many customers were reluctant to frequent hotels (Morosan & DeFranco, 2021).

Chen et al. (2021) confirmed that contactless technologies promote social distancing and are more accepted by consumers concerned about contagion. Kang et al. (2022) also pointed out that adherence to these technologies depended on the perception of risk: when signs of contagion were high, use increased, but decreased as vaccination progressed. Finally, the social context influences consumer habits. The pandemic has heightened concerns about distancing, driving the use of contactless technologies in hospitality. However, factors internal to consumers, such as sociability, continue to modulate these behaviors.

Method

This research, of a conclusive nature, is characterized as descriptive and quantitative. Data was collected using an online survey between October 2022 and April 2023. Thus, the resulting base of participants' responses to the self-administered questionnaire represents a single cross-sectional period (Malhotra, 2019). The study population was made up of Brazilian citizens or foreigners living in the country, aged at least 18 years old, with some kind of experience of consuming accommodation services. The sample size was delimited based on Hair et al.'s (2014) assumption that there is a positive relationship between the number of variables contained in the data collection instrument and the number of individuals needed for the study. The questionnaire used consisted of 12 questions, with 25 items. Of these, 17 were scales and 8 were sociodemographic and behavioral. Therefore, a proportional estimate of 1:10 cases per variable was adopted, resulting in a minimum sample of 250 responses. In total, 299 valid cases were obtained and the elements were included in the sample using the non-probabilistic snowball sampling technique.

The four scales used in the research (Table 1) were Likert-type, with seven points each. The first, with five items, was an adaptation by Hao and Chon (2021) of the scale proposed by Bravo et al. (2019), aimed at assessing the customers' experience of contactless service. In this study, it was adapted once again to measure respondents' **Attitude** towards hotel services offered without direct physical contact (contactless) between the consumer and the staff of a lodging establishment. To check participants' **Readiness** to use contactless technologies in hospitality, the intelligence operation scale of Chen et al. (2021) was adopted, with three items referring to the use of devices connected and operated with the Internet of Things, big data, artificial intelligence and other technologies. The social distance and event disruption scales were also removed from the same study.

While the former corresponded to six items used to measure the **Sociability** of the interviewees, the latter had three items adapted so that it was possible to assess the effects of the **COVID-19** outbreak on the behavior of the participants in this survey in relation to their post-pandemic hosting habits.

Table 1. Data collection instrument

Construct	Item	Label
Attitude (AT)	The contactless service in hotels suits my needs.	AT1
	The contactless service in hotels is reliable.	AT2
	Hotels with contactless service are superior to other hotels.	AT3
	The contactless service in hotels is a good service.	AT4
	The contactless service in hotels is a quality service.	AT5
Readiness (RE)	I like to use smart devices to control my room.	RE1
	I like to open the room with a digital password function.	RE2
	I like to use smart devices to get in and out without anyone bothering me.	RE3
Sociability (SO)	I like to chat in public places.	SO1
	I like to share meals with others.	SO2
	I like to attend activities with different occasions.	SO3
	I usually keep my distance from others.	SO4
	I usually have only business contact with others.	SO5
	I do not like to have any contact with others.	SO6
COVID-19 (COV)	The COVID-19 outbreak has made me feel concerned about staying in hotels.	COV1
	The COVID-19 outbreak has changed my past habits of staying in hotels.	COV2
	The COVID-19 outbreak has forced me to change the way I used to stay in hotels.	COV3

IBM SPSS Statistics 22 software was used to analyze the data. Descriptive statistics (frequency, mean and standard deviation) were used to evaluate the behavior of the variables under study, as well as to outline the profile of the sample investigated. In this initial phase of the research, an exploratory factor analysis was carried out on the constructs investigated. In addition, the Pearson correlation statistical test was applied, which, according to Paranhos et al. (2014), is capable of assessing the intensity of the correlation between variables in cases where it is difficult to identify the degree of interdependence between them. This technique was chosen because it is considered suitable for checking the possible interactions between the constructs under investigation.

Results and Discussion

Sample Profile

The sample is mostly female (65.9%), with 32.4% men, 1.3% non-binary and 0.3% who preferred not to state their gender. In terms of age, 72.6% are between 21 and 50 years old, with the 31 to 40 age group standing out (27.1%). In terms of family income, 45.8% earn between 3 and 9 minimum wages, with the R$3,636.01 to R$7,272.00 range being the most representative (28.1%). In terms of education, 96% have a university degree or more, with 66.9% having a postgraduate degree.

Regionally, 39.8% live in the Northeast, followed by the South (22.4%) and Southeast (19.4%). In terms of motivations, 76.9% travel for leisure and 21.1% for work. The frequency of accommodation is concentrated between 1 and 5 times a year (77.3%). Finally, 91.3% use digital channels to search for information, mainly tourism websites (64.2%) and social networks (27.1%).

Descriptive Analysis of Variables

To carry out the descriptive analysis of the variables investigated, indexes such as mean and standard deviation were observed. According to Table 2, for the Readiness construct, the highest mean is in item RE3 (5.32), indicating that many respondents like to use digital devices without interference from third parties.

Table 2. Descriptive analysis of variables

Construct	Item	Mean	Standard deviation
Readiness	RE1	5,20	1,617
	RE2	5,01	1,718
	RE3	5,32	1,634
Attitude	AT1	4,51	1,796
	AT2	4,69	1,612
	AT3	3,01	1,717
	AT4	4,36	1,585
	AT5	4,30	1,534
Sociability	SO1	5,24	1,443
	SO2	4,80	1,744
	SO3	5,34	1,387
	SO4	3,41	1,677
	SO5	2,82	1,776
	SO6	1,89	1,351
COVID-19	COV1	4,28	1,939
	COV2	4,21	1,919
	COV3	3,89	1,901

Also according to Table 2, for the Attitude construct, the highest average is in item AT2 (4.69), revealing that a large part of the sample agrees that contactless services in hotels are reliable. Regarding the Sociability construct, item SO3 presented the highest average (5.34), which suggests that the sample accessed likes to participate in activities on different occasions. Finally, the COVID-19 construct has its highest average in item COV1 (4.28). This suggests that many respondents believe that the pandemic has generated concerns related to the consumption of hotel accommodation. The standard deviations of the items analyzed, for the most part, were very close to 1, indicating low variability in the interviewees' responses.

Exploratory Factor Analysis

Table 3 shows the results of the exploratory factor analysis (EFA). With the exception of item AT3, all the communalities are greater than 0.6, as recommended by Hair et al. (1998). The KMO indices are satisfactory, indicating the suitability of the sample for factor analysis (Hair et al., 1998). The df, Chi-square and Sig values are significant ($p < 0.05$), confirming sufficient correlation between the variables for factor analysis (Hair et al., 1998). The variance explained is higher than 70% for most of the constructs, showing that the factors adequately explain each construct. Cronbach's alpha values, with the exception of the Sociability construct, are above 0.7 (Hair et al., 1998), indicating acceptable internal consistency for all the scales used.

Table 3. EFA results

Construct	Item	Communalities	KMO	*Bartlett*			Variance explained	Cronbach
				df	Chi-square	Sig		
Readiness	RE1	0,797	0,738	3	424,400	0,000	78,80%	0,865
	RE2	0,784						
	RE3	0,783						
Attitude	AT1	0,755	0,800	6	793,801	0,000	77,50%	0,882
	AT2	0,732						
	AT3	0,433						
	AT4	0,818						
	AT5	0,795						
Sociability	SO1	0,682	0,796	15	513,932	0,000	68,03%	0,139
	SO2	0,671						
	SO3	0,657						
	SO4	0,690						
	SO5	0,701						
	SO6	0,682						
COVID-19	COV1	0,698	0,691	3	622,274	0,000	82,01%	0,888
	COV2	0,879						
	COV3	0,884						

Pearson Correlation Results

Table 4 shows the results of the Pearson correlation tests. Analysis of the Pearson correlations between the Readiness, Attitude, Sociability and COVID-19 variables revealed important relationships for understanding the factors that influence the acceptance of contactless technologies in the accommodation sector. The positive and moderate correlation between Readiness and Attitude stands out ($r = 0.332$; $p < 0.01$), indicating that individuals with a greater technological predisposition tend to have more favorable attitudes towards the use of these technologies. This result reinforces the importance of familiarity with technology as a facilitator of the adoption of innovations in services.

Table 4. Pearson correlation results

	Readiness	Attitude	Sociability	COVID-19
Readiness	-	0,332**	0,104	-0,020
Attitude	0,332**	-	-0,097	0,114*

Sociability	0,104	-0,097	-	0,054
COVID-19	-0,020	0,114*	0,054	-

*. The correlation is significant at the 0.05 level. **. The correlation is significant at the 0.01 level.

In addition, a positive but weak correlation was identified between Attitude and COVID-19 ($r = 0.114$; $p < 0.05$), suggesting that the pandemic had a slight but statistically significant impact on the formation of more favorable attitudes towards contactless technologies (Table 4). This finding points to the influence of health risk contexts in accelerating behavioral changes, reinforcing the relevance of external factors, such as the pandemic, in the adoption of solutions that reduce physical contact.

On the other hand, the Sociability variable did not show significant correlations with any of the others, indicating that the level of sociability of individuals has no direct influence on technological predisposition or attitude towards contactless technologies. Similarly, there was no relationship between Readiness and the impact of COVID-19. These results suggest that, in the context of this research, technological predisposition and the effects of the pandemic are the main factors associated with consumer attitudes towards the use of these technologies in the hotel sector.

Conclusion

Overall, the results reinforce the centrality of technological readiness as one of the main determinants of favorable attitudes towards contactless technologies in the hospitality sector. Although the influence of the COVID-19 pandemic was statistically significant, its practical impact was limited, indicating that health crises can act as temporary catalysts for change, but do not replace the need for prior technological preparation on the part of consumers. Furthermore, the absence of significant correlations involving Sociability suggests that individual factors related to the preference for social interactions may not play a relevant role, at least directly, in the acceptance of these technologies.

This study offers important theoretical contributions to the understanding of technology adoption in hospitality services. The findings underscore the central role of technological readiness as a key antecedent to the formation of favorable attitudes towards contactless technologies, extending classical models such as TAM and UTAUT. Additionally, the research highlights that while the COVID-19 pandemic exerted a statistically significant influence on consumer attitudes, its practical impact was limited, suggesting that health crises act more as temporary behavioral accelerators rather than long-term determinants of technology acceptance.

Another relevant contribution concerns the non-significant role of sociability in influencing readiness, attitude, or pandemic-driven behavioral changes. This challenges existing assumptions in the literature that emphasize psychological traits as important predictors of technology adoption in service contexts. The results indicate that cognitive and experiential factors related to technology may override personality-based variables, pointing to the need for revising theoretical models that overemphasize individual differences in sociability when explaining consumer acceptance of contactless services in hospitality.

The findings of this study offer practical guidance for hospitality managers aiming to increase the adoption of contactless technologies. Given the strong influence of technological readiness on consumer attitudes, hotels should invest in guest education and digital engagement strategies that highlight the ease, reliability, and benefits of these services. As the pandemic's influence appears temporary, long-term adoption will depend more on perceived value and convenience rather than health concerns. Furthermore, since sociability did not significantly affect consumer attitudes, contactless services can be broadly promoted across different customer segments, ensuring that technology is framed as an enhancement to service quality and not a substitute for human interaction. Additionally, staff training programs that position employees as technology facilitators can help reduce guest resistance and improve satisfaction with the service experience.

It should be noted that this research is an initial stage of a study under development. In the future, the theoretical model with the dimensions investigated will be analyzed using structural equation modeling. This is expected to strengthen the methodological robustness of the research and obtain findings that are more

significant. We also intend to compare consumer behavior before and after the pandemic period. It is recommended that future studies further investigate other mediating or moderating variables, such as risk perception, trust in technologies, and previous experiences with automated services, in order to broaden the understanding of the different factors that influence consumer behavior in this emerging context.

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