

# The Mediating Role of Technology During the Covid-19 Pandemic on Guest Convenience and Service Quality of Hotels

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## Abstract

The study aimed to investigate the impact of technology on enhancing guest convenience and service quality in hotels during the pandemic in the four (4) and five (5) star hotels in the National Capital Region (NCR) Metro Manila, Philippines. The Pearson-Correlation revealed that there was a significant relationship exists and it implies that the better the quality of services, the better the assessment of service convenience on the part of the hotel guests. In addition, the Covariance-based structural equation modeling (CB-SEM) analysis revealed significant positive effects of technological integration on both guest convenience and perceived service quality. The key contribution of this paper lies in its novel examination of technology as a mediator in the hotel industry during a global crisis, providing valuable insights for hotel managers and stakeholders in strategizing their services and operations for improved customer satisfaction and business resilience.

**Keywords:** Technology Use, Guest Convenience, Service Quality, COVID-19, NCR Hotels

## Introduction

In the light of recovery from the devastating effect brought by the COVID-19 pandemic on the tourism and hospitality industry (Filimonau et al., 2020), the lodging business more specifically the hotels across all regions of the globe and in the Philippines is under the challenge of the recovery and retrofitting their strategies not just in coping, mitigation, but in the long-term planning. It can be seen from different research that to build a good foundation in terms of different challenges faced by hotels, António and Rita (2021) stated that digital transformation and the use of full pledge technology were not on many hotels' strategic plans until COVID-19 hit, whereas, the use of personal and public technologies to answer the issues in social distancing and safety protocols in hotels is the new trends in this industry (Morosan, 2021).

More studies from Shin and Kang (2020) revealed that customers' trust in the hospitality business can be regained by employing technology advancements, risk reduction techniques,

and the utilization of new technologies such as artificial intelligence (AI robots), many self-service technology (SST) have received attention during the COVID-19 pandemic, including digital keys and service robots (Choe et al., 2021) in hospitality and tourism can be imposed as a potential safety-related problem solver (Perić & Vitezić, 2021). Lastly, the ability of AI-based self-service technology (SST) to minimize direct service staff engagement (Meuter et al., 2000) stands out in the sense of service quality (Gursoy and Chi, 2020; Yang et al., 2020), comparing customer service quality ratings for human contact services of the hotels (Park et al., 2021).

As COVID-19 continues to be a threat in the hotel and lodging businesses due to the strict mobility of the government, this study bridges the gap between the increase in the adaptation of new technologies and triggered very few studies in analyzing and discussing the implementation of different artificial intelligences about safety and security measures like infrared lights, HEPA filters, online booking, hotel technologies, such as kiosk check-in and out system, mobile check-in system, and robot cleaning system, and ultraviolet (UV) light cleaning, and contact tracings to name a few. Furthermore, this study will also answer the call of the Industrial Revolution 5.0, in which COVID-19 pushes humans and machines to work together to bring a smart society that employs artificial intelligence (Sarfraz, 2021).

This study also is expected to further assess the human interaction between technology and investigate the mediation between the service quality provided by the hotel employees to bring guest convenience at the same time during this pandemic and in the light of post-pandemic scenarios in the hotel industry. Applying technology as a mediation or a moderation perspective to the service quality and guest convenience formation, the researchers theorize that customer service through image levels are significant element in enhancing satisfaction. The planned connection cannot be made without these two crucial variables: service quality and convenience. To further understand how the COVID-19 epidemic impacts visitor happiness, this study examines the relationship between service quality and guest convenience, focusing on both process and outcome quality.

Thus, the importance of integrating technology within the hospitality sector, particularly in hotels during challenging times like the COVID-19 pandemic, cannot be overstated. This topic is significant because it addresses a pressing need within the industry to adapt and evolve in response to unforeseen global crises that directly impact travel and lodging. The pandemic has accelerated the digital transformation in hotels, pushing them to innovate and implement technology-based solutions to ensure guest safety, convenience, and high service quality. As travel restrictions and health concerns have drastically altered consumer behavior and expectations, the hospitality industry faces the challenge of reinventing service delivery to meet these new demands. Therefore, studying the mediating role of technology in enhancing guest convenience and service quality during such critical times is both timely and essential.

The relevance of this research extends beyond academic interest, offering practical implications for hotel managers, stakeholders, and policymakers. By understanding how technological interventions can mediate service quality and guest convenience, hotels can better strategize their operations to align with current consumer expectations. This is particularly beneficial in ensuring business continuity and resilience in the face of future crises. Furthermore, insights from this study can guide the development of policies and frameworks that support the sustainable integration of technology in the hospitality sector, ultimately leading to enhanced guest experiences and satisfaction. Consequently, the findings of this research hold value for a wide audience, including hoteliers looking to improve their

service offerings, technology developers focusing on hospitality solutions, and academics interested in the intersection of technology, hospitality, and crisis management.

Lastly, this study will be a catalyst in building a comprehensive model based on the use of CB-SEM in the hotel industry which will be better equipped to deal with the COVID-19 pandemic by adopting a paradigm of autonomous, intelligent, and self-regulating business accommodations.

### **Contextual Literature**

In connection to the use of technology amidst Covid-19 pandemic, the Technology Acceptance Model known popularly as TAM by Davis (1989) introduces the four variables namely Perceived Ease of Use and Perceived Usefulness, however, Mukherjee et al (2021) added trust, as well as discomfort, yet the study of Bharwani and Mathews (2021) contradict it as most of the respondents revealed that there is a high level of comfort in use with this technology during the pandemic, insecurity also adds but Lau (2020) argued that security is a better key variable in enforcing new technologies during the pandemic.

From the use of technology in hotels, the guests or customers are also looking into the service quality. Iqbal et al (2018) stated that there is a profound effect on the way customers interact between those two variables, this service quality is congruent to five (5) dimensions in SERVQUAL as the assurance, tangibility, empathy, reliability, and responsiveness from Parasuraman et al. (1988). This is also congruent with the study of Jasinskis et al. (2016) that it is conformity of expected quality with the quality experienced has a significant influence on the customer's loyalty.

Moreover, as confirmed by Yallop and Seraphin (2020), guest's experiences also relate to service quality experiences and how they affect the service providers. It also highlighted the accommodating-sharing which simply means that it is not just the consumer or the guest who seeks, but also considering the employees as they are the one who provides the convenience to the guest. Based on the study also of Mehmood & Najmi, (2017) service convenience is a way to speed up the purchase of customers in the company and to give a service properly to the customers to make their lives easier. There are a lot of sectors that need to be considered when trying to give the best convenience to the guest such as Decision Convenience, Access Convenience, Transaction Convenience, and Benefit and Post Benefit Convenience (Benoit et al., 2017).

### **Objectives of the Study**

This study seeks to assess the Role of Technology Use During the COVID-19 Pandemic in Guest Convenience and Service Quality of Hotels.

Specifically, it seeks to: 1) exhibit the hotel guests' psychographic profile in terms of types of devices (frequently using), Payment Method (frequently using), and lifestyle. 2) assess the applied technology being used by hotels during Covid-19 pandemic, the hotel service quality to it using the SERVQUAL, and determine the service convenience dimension (SERVCON) of hotel guests. 3) determine the significant relationship between guest service convenience and service quality; 4) determine whether assessment of technology mediates the relationship between guest service convenience and service quality.

### *Hypotheses of the Study*

H1: Applied Technology has a significant and direct relationship to Hotel Service Quality

H2: Hotel Service Quality has a significant and direct relationship to Service Convenience

H3: Applied Technology mediates the relationship between hotel service quality and service convenience.

### Theoretical Framework

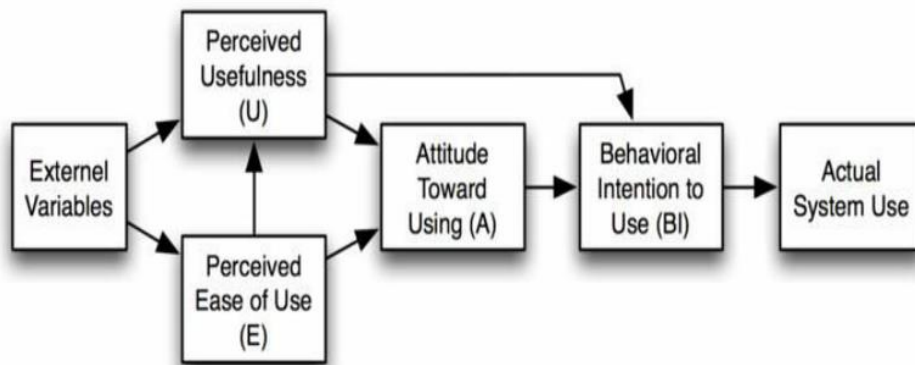
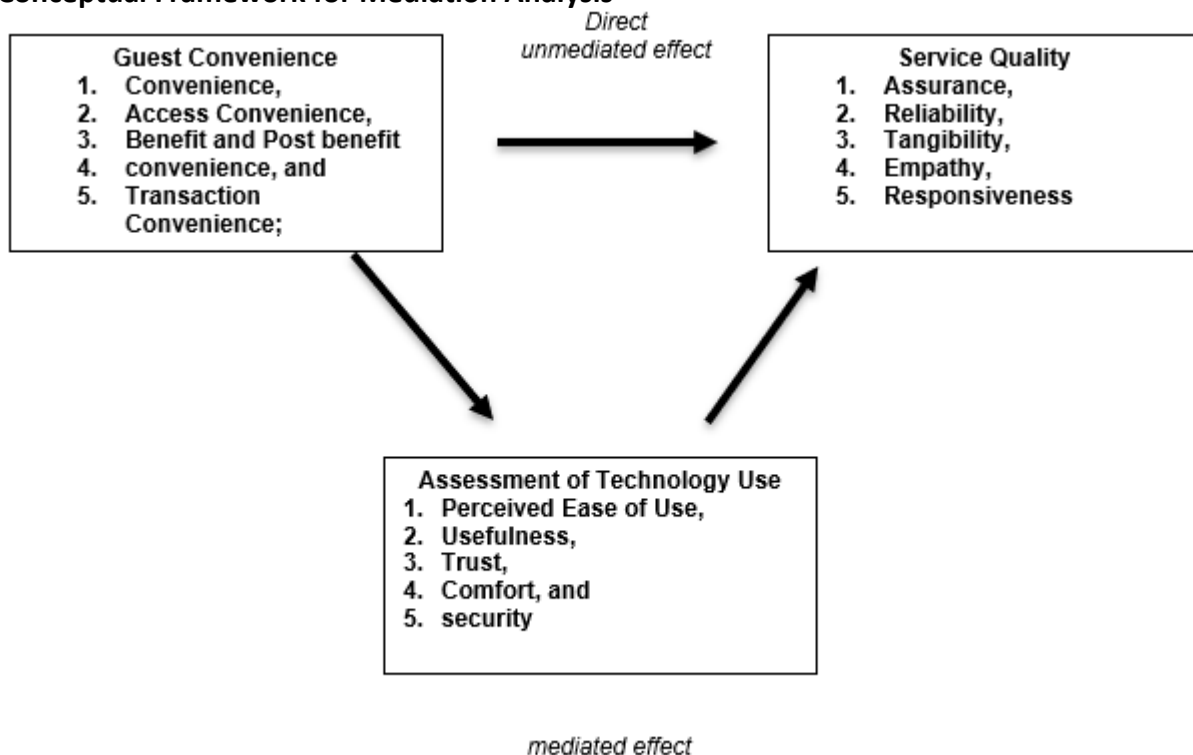


Figure 1. The Technology Acceptance Model (TAM Model) by David 1989

The researchers used one of the most influential models of technology acceptance which is the Technology Acceptance Model (TAM) of Davis, (1989). This model (figure 1) proposes that two primary factors influence an individual's intention to use new technology. These factors are perceived ease of use and perceived usefulness. TAM has been a popular choice as a model to employ when attempting to comprehend and make sense of user behavior within an information system like the use of technology during a pandemic. The model has been put through a variety of different kinds of research, all of which have produced trustworthy findings regarding its performance. Thus, the researchers have explained and adapted the use of the technology acceptance model as well as the various critical variables that are included in it.

In this research, an attempt was made to review both the model and several other related studies that have been conducted in the domain such as the use of other two latent variables- Service Quality by Parasuraman (1987) and Service Convenience. The research also attempted to comprehend the various alterations that various researchers have made to the model throughout its development. The study also analyzed the application domains that are suitable for putting the technology acceptance model into practice. TAM has been critiqued for several reasons; yet, it is still useful as a broad framework, and it is compatible with some analyses that have been conducted into the elements that impact older adults' intention to utilize new technology (Braun, 2013).

**Conceptual Framework for Mediation Analysis****Figure 2. Conceptual Framework for Mediation Analysis**

The researchers followed the common mediation analysis based on the hypothesis of the study posted in the objective. This research will use a predictive-causal method that predicts the relationship between service convenience and each service quality sub-variables using the SEM (figure 2). The second is the possible mediation of technology use based on the result of the first hypothesis. To further confirm whether to use mediation or moderation from the first two major variables, a confirmatory test using SEM will be used. Thus, this method has become one of the most widely used approaches for investigating the mechanisms by which effects function and the factors that influence them (Sarstedt et al., 2019), and this integrated mediation and moderation analysis examines and tests the proposed hypothesis regarding how mediated interactions fluctuate because of environment, boundaries, or individual differences by integrating mediation and moderation analyses (Menon et al., 2019).

**Methods**

The study used a predictive-causal method because it was designed to determine whether one or more variables- technology use mediates or moderates one or more outcome variables which are the service quality and service convenience, as the prediction perspective is present with this complex model. This approach is also known as structural equation modeling (SEM), which can be used for exploratory and predictive analyses of the causal links and influence of variables suggested in theoretical models.

The researchers chose the four and five-star hotels that are DOT-accredited hotels or the twenty-seven accommodation establishments classified under hotel operation as multiple-use hotels with staycation accreditation known as the Accommodation Establishments that have been inspected by a team composed of personnel from the Philippines' Department of Tourism (DOT) and Bureau of Quarantine (BOQ) that are

determined to be suitable for both quarantine and non-quarantine guests because of compliance with standards for physical separation of guests from different key areas in the National Capital Region (DOT Administrative Order No. 2021-007).

The study used a sample size of 325 based on the G-power software, which has a fixed effect, special, main effects, and interaction, alpha of 0.10, power of 0.90, and effect size of 0.25. Furthermore, the study used the questionnaire as the main instrument for data gathering and adapted different instruments from different related works of literature and authors. After a thorough validation by the said experts, the researchers performed a pilot testing further to validate the instrument's internal consistency to 30 respondents and was tested using a Cronbach Alpha to measure the reliability and internal consistency of the instrument.

The first part is the psychographic profiles which a researcher-made and customized through the help of an industry expert from the hotel industry. Second is the Applied Technology being used by hotels during the COVID-19 pandemic which is adapted from the study of (Mukherjee et al., 2021). Service robots are an option for contactless services due to the COVID-19 pandemic in the hotel's Decision. The third part is the Hotel Service Quality to its guests adapted from the study of (Kanyama et. al., 2022). Hotel Service Quality and Its Effect on Customer Loyalty: The Case of Ubon Ratchathani, Thailand during COVID-19 Pandemic. Lastly Service Convenience Dimension of guests adapted from Seiders et al., (2007). SERVCON: Developing and validating a multidimensional service convenience scale. The Likert scale that was used for the entire instrument was a five-point one, which is considered more accurate than the 4-point one (Johns, 2010). The scale is as follow: 5-Strongly Agree; 4-Agree; 3—Moderately Agree; 2-Disagree; 1-Strongly Disagree

In addition, the content validation was done through the help of four industry experts, which are the hotel managers from different accommodation establishments in the NCR as well as nearby areas which are experts from their field of specialization. The content analysis was verified using the validator's instrument guide assessment using a validation scale of 1-5, and the comments and suggestions of the experts were applied to fit the study.

In addition, the researchers used a Confirmatory Factor Analysis or CFA alongside the use of CB-SEM in constructing the model using latent variables- Applied Technology, Service Quality (ServQual), and Service Convience (ServCon). In addition, results will most likely give good fit indices because the same data will tend to conform to the structure(s) of the scale discovered with EFA.

After a thorough validation by the said experts, the researchers performed a pilot test to further validate the internal consistency of the instrument to 30 respondents and a was tested using a Cronbach Alpha to measure the reliability and internal consistency of the instrument. Below is the result of the reliability analysis (table A):



Table A

*Reliability Test Result*

<b>Variables and Sub variables</b>	<b>Cronbach's Alpha</b>	<b>Items</b>	<b>Verbal Interpretation</b>
<b>Applied Technology</b>			
PEU	0.852	4	Good
EUS	0.778	4	Acceptable
TRU	0.858	4	Good
COM	0.836	3	Good
SEC	0.787	3	Acceptable
<b>Service Quality</b>			
TAN	0.892	6	Good
REL	0.876	5	Good
RES	0.949	5	Excellent
ASS	0.937	5	Excellent
EMP	0.931	5	Excellent
<b>Service Convenience</b>			
DESC	0.916	4	Excellent
ACCC	0.888	4	Good
BPCO	0.864	4	Good
TRAN	0.902	3	Excellent

*Legend: According to George and Mallery (2003) provide the following rules of thumb: “\_ > .9 – Excellent, \_ > .8 – Good, \_ > .7 – Acceptable, \_ > .6 – Questionable, \_ > .5 – Poor, and \_ < .5 – Unacceptable”*

There is no need to use Exploratory Factor Analysis (EFA) which is a statistical method to reduce the items in the questionnaire to be more fit to use as confirmed by Gunawan (2021) that cross-cultural adaptation of the instrument, a cross-cultural adaptation of the instrument, the Confirmatory Factor Analysis (CFA) alone is acceptable. Thus, the researchers only used CFA alongside the use of CB-SEM in constructing the model using latent variables- Applied Technology, Service Quality (ServQual), and Service Convenience (ServCon). In addition, results will most likely give good fit indices because the same data will tend to conform to the structure(s) of the scale that is discovered with EFA. This is also congruent to the study of Said et al (2011) Confirmatory factor analysis plays the role of validating and finding the reliability of any measurement in most social science studies.

Table B

*Confirmatory Factor Analysis Result***Chi-square test**

<b>Model</b>	<b><math>\chi^2</math></b>	<b>df</b>	<b>p</b>
Baseline model	20034.029	1711	
Factor model	5069.099	1649	< .001

*p*<0.05

<b>Index</b>	<b>Value</b>
Comparative Fit Index (CFI)	0.913
Tucker-Lewis Index (TLI)	0.906
Root mean square error of approximation (RMSEA)	0.078
Standardized root mean square residual (SRMR)	0.049

Based on the result from table B., the chi-square test was significant, however, the additional fit measures such as CFI and TLI were above 0.90 and the resulting RMSEA and SRMR were below 0.080. This indicates that the model fit was good. Further, the factor loadings were loaded high enough since all falls on the set value. Thus, the data confirmed well with the theory.

For the data gathering procedure, the researchers used different online journals such as Elsevier, Google Scholar, and other online refereed publications for the review of literature as well as in support of different arguments and discussions for the entire manuscript. In addition, the researchers used the updated statistics and numbers from the Philippines' Department of Tourism such as the updated list of the accredited hotels which are under the accreditation and permit to operate as multiuse or multiple-use accommodation establishments with staycation and the possible tourist or guest arrivals in the first or second quarter of 2022.

The sampling technique used is a non-probability sampling through quota sampling using an online survey using Microsoft Forms and with the coordination and permit from the hotels to share it with their guests, a total of 325 guests responded from the given questionnaire. The sample size is 287 based on the G-power software, which has a fixed effects, special, main effects, and interaction, alpha 0.10, power 0.90 effect size 0.25, however the researcher opted to use a greater sample size of 325 to further strengthen the results of study. However, due to data privacy, very few to no hotels are permitted to survey their guests, thus the selection was done online (personally) through contacting different guests by using referrals or snowball, known to be as another non-probability sampling.

After the collection of data, the researchers used the following to analyze the data. First, frequency and percentage were used to describe both psychographic and demographic profiles. Second, the Pearson Correlation was used to determine the significant relationship between service quality and service convenience. Lastly, the CB-SEM or the Covariance-Based Structural Equation Modelling using SMART PLS was used to assess the relationships between service quality and convenience and the possible mediating role of technology use.



**Results and Discussion**

Table 1

*Distribution of Hotel Guest's Psychographic Profile*

<b>Types of devices (frequently used)</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Smartphones	305	93.8
Tablets	4	1.2
Desktop/laptop	16	4.9
<b>Payment Methods (frequently using)</b>		
Cash	139	42.8
Cards	113	34.8
Online transfer	70	21.5
NFC Payment	3	.9
<b>Lifestyle</b>		
Hedonistic lifestyle	95	29.2
Adventurous lifestyles	154	47.4
Individualistic	35	10.8
Promethean	18	5.5
Conscious Travelers	23	7.1

The table 1 presents the distribution of the psychographic profile of the hotel guests. For the types of devices, most of the hotel guests are using and currently enjoying their smartphones which has the highest percentage (93.8%) followed by those guests who are using desktop or related computing machines such as laptops-PC or Macs (4.9%), and tablets such as iPads and tabs (1.2%) as the least among the given choices.

The data is relative and very comparative to the current state of most of the hotel guests as well as most people nowadays are using a smartphone as part of their normal and daily lives for communication, business transactions, personal banking and shopping, personal lifestyle like photography and doing internet of things, and using different applications or apps for them to use and communicate with other devices or technologies around them.

Also, a smartphone is an evolution of different devices such as the PDA or personal digital assistant, walk-man or radio, and a telephone that fits in the palm of the user's hand. This kind of technology is also adaptable to change like using different applications that may be paired through the use of data like 4G-LTE and 5G as well as Wi-Fi which the hotels are also giving access to for the guests to enjoy a convenient way to validate their reservations, as well as the use of QR code for contact tracing due to Covid-19 pandemic and the new trend nowadays is the use of smartphone to control the temperature, lights, blinds or curtains, and other features of a hotel room which directly correlates to convince from the end of the hotel guests or the customers.

The last from the list are iPads and other tablets, which means that users may be using these kinds of gadgets due to portability as a substitute for laptops. Portability brings the power of a computer or laptop and a mobile that can connect to Wi-Fi and data such as 4G-LTE or 5G that they may use for text messaging and calls as well as doing business or clerical work that mimics both smartphones and laptops.

From the same table, the payment methods can be categorized into four cash (42.8%), cards (34.8%), online transfer (21.5%), and NFC payment (0.9%). However, the categorization can still be classified into two (2), the cash (42.8%) and the cashless (57.2%-the summation of

the 3) which dominated the payment method being used by the hotel guests. This gives us a good comparison that those guests who are using this cashless transaction were adapting to change because technology nowadays offers different variants or payment methods under the cashless category of which the researchers were able to divide it and cluster it into users who prefer to use their debit or credit card by just using tap to pay or pay wave by MasterCard, Visa, and Europay to name a few.

It was followed by the guests who are using online transfers that use their smartphone apps such as GCash, Maya, bank transfers, and QR codes to pay in a cashless manner. This is a new trend also that was pushed by this pandemic to avoid contactless transactions between hotel guests and its staff. Lastly from the cashless transaction is the NFC or Near Field communication which uses a short-range wireless connectivity technology that enables the guests or users to use their virtual credit or debit cards to harmoniously be synchronized with their devices.

It is also a fact that guests are not familiar with this technology and prefer to pay cash is a manifestation of a gradual use of cashless transactions. Some guests are afraid to use cashless transactions because some errors may be caused to debit some amount during the cashless transactions and that is true to some extent which is being experienced by those users or guests who used to transact using GCash and other online transfers or QR code scanning.

From the same table, lifestyle is the last category under the psychographic profile of the hotel guests which directly correlates with how they behave as tourists, as travelers, or even as hotel guests. Most of the hotel guests categorize themselves as an adventurer or having an adventurous lifestyle (47.4%) because they want a new experience, these may have been a result of more than 1-2 years of staying at home and being missed staying out of their homes during the pandemic era. In addition, these adventurous people or guests tend to stay in different hotels or properties and want to look into different hotel brand experiences or tourist attractions nearby the property.

The next is the hedonic lifestyle (29.2%) these guests tend to be pleasure-seeking individuals who always want to feel satisfied, followed by the individualistic (10.8%) which are the guests who are independent and want to be alone, they may be classified as business owners or travelers who are staying in the hotel for quite some time. The next on the list is the conscious travelers (7.1%) who want to contribute socially and economically to locals, and immerse themselves into the communities they visit, and lastly are the Prometheans (5.5%) known to be the "classy" ones, and who are luxurious, extravagant lifestyle, and risk-takers.

Table 2

*Relationship Between Hotel Service Quality to its Guests and Service Convenience Dimension of Guests*

<b>Tangibility</b>	<b>r-value</b>	<b>p-value</b>	<b>Interpretation</b>
Decision Convenience	.697**	0.000	All are highly significant with a strong direct relationship
Access Convenience	.686**	0.000	
Benefit & Post-benefit Convenience	.677**	0.000	
Transaction Convenience	.643**	0.000	
<b>Reliability</b>	<b>r-value</b>	<b>p-value</b>	<b>Interpretation</b>
Decision Convenience	.740**	0.000	All are highly significant with a very strong direct relationship
Access Convenience	.725**	0.000	
Benefit and Post-benefit Convenience	.751**	0.000	
Transaction Convenience	.730**	0.000	
<b>Responsiveness</b>	<b>r-value</b>	<b>p-value</b>	<b>Interpretation</b>
Decision Convenience	.739**	0.000	All are highly significant with a very strong direct relationship
Access Convenience	.766**	0.000	
Benefit and Post-benefit Convenience	.729**	0.000	
Transaction Convenience	.720**	0.000	
<b>Assurance</b>	<b>r-value</b>	<b>p-value</b>	<b>Interpretation</b>
Decision Convenience	.722**	0.000	All are highly significant with a very strong direct relationship
Access Convenience	.779**	0.000	
Benefit and Post-benefit Convenience	.713**	0.000	
Transaction Convenience	.721**	0.000	
<b>Empathy</b>	<b>r-value</b>	<b>p-value</b>	<b>Interpretation</b>
Decision Convenience	.747**	0.000	All are highly significant with a very strong direct relationship
Access Convenience	.749**	0.000	
Benefit and Post-benefit Convenience	.768**	0.000	
Transaction Convenience	.722**	0.000	

*Legend:*

*(Interpretation of correlation coefficient, r) +(-) 1.00 = Perfect direct (inverse) relationship; +(-) .70 to .99 = Very strong direct (inverse) relationship; +(-) .40 to .69 = Strong direct (inverse) relationship; +(-) .30 to .39 = Moderate direct (inverse) relationship; +(-).20 to .29 = weak direct (inverse) relationship; +(-) .01 to .19 = Negligible direct (inverse) relationship; 0 = No relationship [zero order correlation]; Significant p-value < 0.01*

Table 2 presents the association between hotel service quality and service convenience dimensions. It was observed that the computed r-values indicate a strong direct correlation, and the resulting p-values were less than the alpha level. This means that a significant relationship exists and implies that the better the quality of services, the better the assessment of service convenience. This indicates that there is a huge connection between service quality and service convenience since all of the indicators under the tangibility variable are perceived to be *highly significant with a strong direct relationship* as can be seen in the table. Moreover, it is also visible that decision convenience ( $r=.697$ ,  $p=0.000$ ), access

convenience ( $r=.686, p=0.000$ ), benefit and post-benefit convenience ( $r=.677, p=0.000$ ), and transaction convenience ( $r=.643, p=0.000$ ) are highly connected to the service quality that is being given by the hotel establishments. This shows that having convenience in the services that the hotel offers, results in the guests acquiring total service quality from the employee. They can provide more efficient and effective service to the guests while also giving a huge convenience to avail their products and services.

Moreover based on the study of Nunkoo et al. (2020) for the hotel sectors to fully satisfy their guests, they should have a total quality service which this is could be determined by having good tangible features in the hotel (Mohammed et al., 2021).

Moreover, under the reliability, it is also evident that there is a *highly significant a very strong direct relationship* between the reliability feature of the hotel sector and all variables under service convenience as perceived by the hotel guests. It is visible that the hotel guests can feel decision convenience ( $r=.740, p=0.000$ ), access convenience ( $r=.725, p=0.000$ ), benefit and post-benefit convenience ( $r=.751, p=0.000$ ), and transaction convenience ( $r=.730, p=0.000$ ), in the hotel sector, which it is highly connected. It also indicates that the hotel guests can rely on these conveniences which brings them a quality service based on their experience. As the hotel guests can acquire this convinces, this makes them feel safer for them to trust and rely on the technologies that the hotel sectors used during the operation.

Furthermore, it is also visible in the table that there is a highly significant with a very strong direct relationship when it comes to the responsiveness variable which indicates that the indicators under the responsiveness are connected with providing service quality to the guests. As the decision convenience ( $r=.739, p=0.000$ ), access convenience ( $r=.766, p=0.000$ ), benefit and post-benefit convenience ( $r=.729, p=0.000$ ), and transaction convenience ( $r=.720, p=0.000$ ), are being acquired by the hotel guests in which it shows that these affect the service quality that they have received for the hotel staffs. This also states that as the employees are being responsive to the requests and queries of the guests this brings convenience to their side since they can work more efficiently with the help of the staff.

Moreover, it is also indicated in the same table that assurance is *highly significant with a very strong direct relationship* when it comes to the relationship of the service quality and the service convenience dimension of the guests. Wherein based on the results the indicators are convenience ( $r=.722, p=0.000$ ), access convenience ( $r=.779, p=0.000$ ), benefit and post-benefit convenience ( $r=.713, p=0.000$ ), and transaction convenience ( $r=.721, p=0.000$ ), are highly connected to the service quality given to the guests. This indicates that the guests can feel that they are being assured that they will be having a good stay in the hotel since they have trusted the employees to do this. As many hotels try to assure the safety and security of their guests, especially during these times of crisis, following such ordinances will help them build the trust that the management needs for them to provide the best service to the guests.

Lastly, as can be seen in the table above there is a *highly significant with a very strong direct relationship* to the variable of empathy when being related to service quality of the hotels. The tables show that the indicators below this variable which are convenience ( $r=.747, p=0.000$ ), access convenience ( $r=.749, p=0.000$ ), benefit and post-benefit convenience ( $r=.768, p=0.000$ ), and the transaction convenience ( $r=.722, p=0.000$ ), are highly connected to the service quality as perceived by the guests in which this shows that the employees who show empathy to the guests affect the satisfaction of the guests and the quality of service of the hotel.

In addition, there has been a lot of research done to follow up on or extend the ServQual instrument, yet some people have the misconception that the factor structure or the

dimensionality of ServQual is always the same regardless of the setting in which the studies are conducted. The research points to the possibility that this is not the case, particularly when additional it is being correlated to such as service convenience or ServCon of hotel guests satisfaction-related variables are also taken into consideration as factors. With the inclusion of the service convenience variables, this research demonstrates that the factor structure or dimensionality that was initially proposed by Parasuraman et al. (1987) will always affect other variables as guests or customers are concerned. This is the case regardless of whether the service convenience construct is included or not.

The service convenience construct was initially proposed to have five classes of concepts by Berry et al (2202) and confirmed also by Mehmood and Najmi, (2017), and Benoit et al (2017) and as well as the findings of this research shows these concepts are correlated with each other having most of the variables are *highly significant with a very strong direct relationship*, except to tangibility which is *highly significant with a strong direct relationship* to which is similar to most of the service quality dimensions. There is a correlation between the various elements of service quality and transaction convenience as well as post-benefit convenience. It manifests and is sufficient to correlate the terms of service quality dimensions or other service convenience dimensions because they are too high. Benefit Convenience, on the other hand, loaded heavily in the reliability dimension of service quality as well as responsiveness, assurance, and empathy, which suggests that the benefit gained from a maintenance service was seen to be an intrinsic component under the service quality dimension.

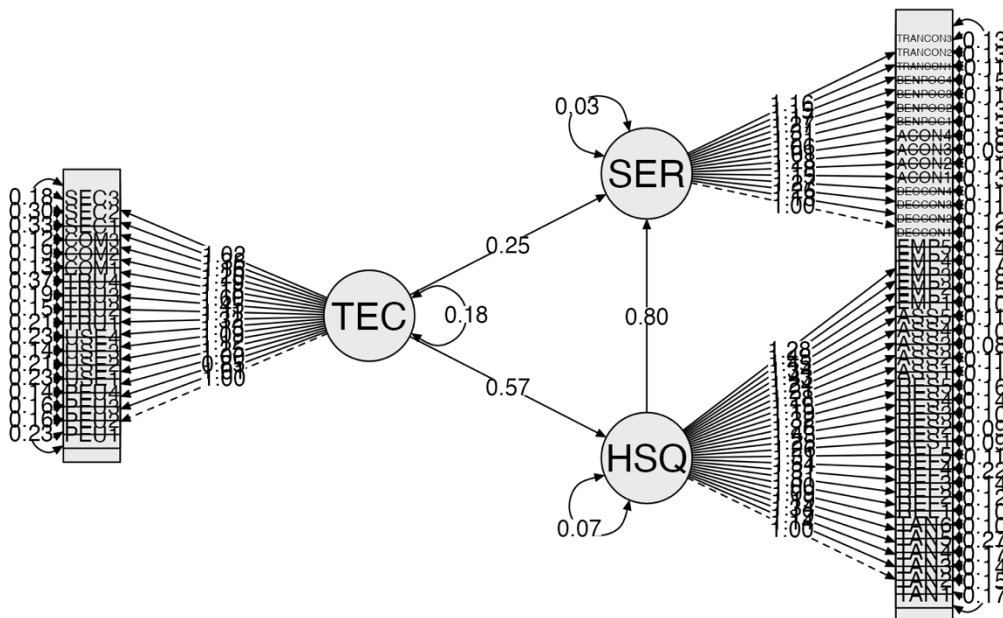


Figure 3. The Structural Model based on Multivariate casual Relationships of the Role of Technology in Service Convenience and Service Quality

Figure 3 presents the model based on the causal relationships of the role of technology to service quality and service convenience. As the arrow from Hotel Service Quality (HSQ) moves towards Service Convenience (SER) this means that there is a high direct and very strong relationship between the two latent variables (0.80). It can be also confirmed by Table 22. Moreover, based on the path modeling, the Applied Technology (TEC) mediates between

the two latent variables-HSQ and SER respectively. A strong direct relationship coming from the TEC (0.57) reveals that technology influences the way guests perceive the service quality during pandemic starting from online booking, checking in/out, cashless payment, the use of QR codes for contact tracing, and the use of Heating, Ventilation, and Air Conditioning (HVAC), UV lights in housekeeping, as well as online menu ordering system that gives the guest and the hotel staffs a two-ways use and application of technology. In addition, it can also be gleaned from the same figure that there is a weak direct relationship (0.25) between TEC going to SER, it is very obvious as it was confirmed during the interview by the researchers with the guests and the hotel GM that in a way, guests tend to get used and apply technology, however, a direct relationship seems to be weak as some of the newly acquired technology in the Philippines are not being new to its users (guest).

The model confirms that based on the Technology Acceptance Model by Davis (1989) the variables about it are still essential, very timely during the pandemic, and can still be applied as we traverse to post Covid-19 pandemic era and as we prepare and move forward in the catalyzation of the Industrial revolution 5.0 which an integration between human and technology.

Table 3  
*Summary of Model Indices*

Model fit -Factor Model		Baseline test			Difference test				
AIC	BIC	n	$\chi^2$	df	p	$\Delta\chi^2$	$\Delta df$	p	
Model 1	20367.277	21048.365	325	5069.099	1649	< .001	5069.099	1649	< .001

Type	Model Indices	Model	Chi-square	df	Value	Ide	Interpretati
					al	Threshold	on
					Threshold	value	
Absolute Fit Measures		The Chi-square of the estimated model	1		<.00	p-value>0.05	Significant/ good fit
		Goodness of Fit Index (GFI)			.940	>0.95 (0.90 too)	Good fit
		Root mean square error of approximation (RMSEA)			.078	<0.08	Good Fit
		Standardized root mean square residual (SRMR)		9	0.04	<0.08	Good Fit
Incremental Fit Measures		Tucker-Lewis Index (TLI)			0.91	>0.90	Good Fit
		Comparative Fit Index (CFI)		3	0.91	>0.95	Good Fit



<b>Parsimoni</b>	Parsimoni					
<b>ous Fit</b>	ous Normed Fit	0.83	50	>0.		Good Fit
<b>Measures</b>	Index (PNFI)					

*\*Ideal threshold values were collated based on Dash and Paul (2021), CB-SEM vs PLS-SEM methods for research in social sciences and technology forecasting*

Based on the result (table 3.), the chi-square test was significant (<0.001), however, the additional fit measures such as CFI (0.913) and TLI (0.91) were above 0.90 and the resulting RMSEA (0.78) and SRMR (0.049) were below 0.080 as well as the other absolute fit indices, incremental measures, and parsimonious fit measures. This *indicates that the model fit was good*. Further, the factor loadings were loaded high enough since all falls on the set value. Thus, the data confirmed well with the theory (*see also Table B*).

The measurement model is related to CFA which is confirmed by the Chi-square test with a Factor model of 5069.099, 1649, and < .001 in that it provides how the latent constructs are signaled by their observed indicators, describes the measurement characteristics of these observed indicators such as reliabilities and validities of the instrument and the indicators on it, and specifies how these measurement properties are determined. Regarding the research framework, the model of confirmatory analysis and analysis of the structural equation model is shown in Figure 1 -The TAM Model. The result shows a good model fit with the empirical data within the expected level.

Different model fit and quality indices were used in assessing the structural equation model. The chi-squared test shows that is statistically significant. The test on the goodness of fit is quite satisfactory where the comparative fit index (CFI) is 0.913 and the Tucker-Lewis index (TLI) is 0.906. These indexes were above 0.90 which shows a perfect fit, thus the obtained indexes from the model are considered good. In addition, the standardized root means square residual (SRMR) index has a value of 0.049 and the root mean square residual has a value of 0.078. These values were below 0.080, therefore, the fit indices fit with the data well.

The model also identifies the causal links that exist among the latent variables and confirms the TAM Model as beneficial within the use of two more latent variables- ServQual and ServCon.

Table 4  
Regression Coefficients to Test Hypotheses Test

Hypothesis	Path	Estimate	SE	z-value	p-value	Result
H1	TECH → HSQ	0.565	0.063	8.957	< .001	Accepted/ Significant
H2	HSQ → SERV	0.796	0.078	10.186	< .001	Accepted/ Significant
H3	TECH → SERV	0.249	0.042	5.956	< .001	Accepted/ Significant

Legend: Tech= Applied Technology, HSQ=Hotel Service Quality, SERV=Service Convenience

Table 4 presents the regression coefficients and weights to test the hypotheses that in H1 and H3 applied technology has a positive and direct relationship with hotel service quality which is equal to 0.565 and to service convenience which is also equal to 0.249 to which both

are also significant with a p-value of 0.001, this also correlate to the mediating role of technology to the two latent variables. This signifies that the applied technology being used by hotels greatly affects the service quality as well as the relationship to service convenience during the pandemic.

Moreover, H2 presents the direct relationship between hotel service quality to service convenience with a regression weight of 0.796 which indicates that it is significant at a level of 0.001 with a strong direct relationship with each other.

Furthermore, the coefficients indicate the strength and direction of the relationships between variables. For instance, a positive coefficient suggests a positive relationship between the variables. The significance of these coefficients is determined by their p-values; a low p-value (typically less than 0.05) implies that the relationship is statistically significant. In this study, each hypothesis is tested to understand how technology influences hotel service quality and guest convenience. The results, as indicated by the regression coefficients and their respective p-values, provide insights into the impact of technology on the hotel industry's service dynamics during the COVID-19 pandemic.

Table 5

*Full Mediation of Treated Variables*

Total Effect	Direct Effect		Indirect Effect	Confidence Interval	Remarks
0.907 (<0.001)	0.737 (<0.001)	HSQ → TECH → SERV	0.170 (0.001)	(< 0.117 0.223)	Full Mediation

*Legend: Tech= Applied Technology, HSQ=Hotel Service Quality, SERV=Service Convenience*

To investigate if there is a mediation on the data used, mediation analysis was also performed. The outcome variable for analysis was *service convenience* and the predictor variable for the analysis was *hotel service quality* (see table 5 above). The mediator variable for the analysis was *applied technology*. The indirect effect of hotel service quality on service convenience was found to be statistically significant [ $\beta = 0.170$ , 95% CI (0.117, 0.223),  $p < 0.001$ ]. Lastly, it can be concluded that upon several tests, such as CFA and SEM, the path can be tagged as a full mediation between applied technology and the relationship between service quality and service convenience.

### Implications of the Study

Several managerial implications can be drawn for the hotel industry. The first is to continue embracing the technological integration of hotels and should actively integrate advanced technologies to enhance guest convenience and service quality. This includes adopting AI-based self-service technologies, digital check-ins, and service robots. These technologies not only address safety concerns in the pandemic context but also elevate the overall customer experience by offering efficient and personalized services.

Secondly is to focus on Strategic management on Technology Acceptance and Service Quality whereas the management should focus on understanding and leveraging the Technology Acceptance Model (TAM) to improve guest experiences. This involves ensuring that the technology is easy to use, useful, and secure. Additionally, the SERVQUAL dimensions (tangibility, reliability, responsiveness, assurance, and empathy) should be emphasized to

improve service quality. By aligning technological enhancements with these service quality dimensions, hotels can effectively cater to evolving guest preferences and needs.

In addition, the employees through the department heads should always conduct training and development prioritized to ensure staff are proficient in using new technologies and maintaining service quality standards. This is crucial for creating a seamless blend of technology and human interaction, ensuring that guests enjoy both the convenience of technology and the warmth of personalized service. Hotels also must adapt to the changing profiles and preferences of guests, such as a preference for cashless transactions and a reliance on smartphones for various services.

Lastly, the pandemic has underscored the importance of being adaptable and resilient. Hotels should continue to innovate and update their business models to remain relevant and competitive in the post-pandemic era. This includes not only technological upgrades but also a focus on service quality and convenience, taking into account the changing dynamics of guest expectations and industry standards.

### **Conclusion**

Most of the hotel guests are using their smartphones in everyday communications as well as in using different kinds of technology not only on a personal aspect but the way how they deal with payment methods. The study revealed also that the guests preferred cashless transactions such as cards, online or bank transfers through QR codes, and local bank payment methods. Lastly, most of the guests were classified as adventurous who want to try new experiences and it is likely congruent to the other psychographic profiles such as the use of communicating devices and the way they use cashless transactions.

The guest also determined that there is a strong service convenience being rendered by hotels using technology during their stay in the hotel gave them access convenience of requesting and other services inside the property. There is also a strong direct relationship between hotel service convenience and the service convenience dimension of guests. This means that was significant relationship exists and implies that the better the quality of services, the better the assessment of service convenience.

Lastly, it was confirmed that the applied technology plays a vital role as a mediator in the attaining of high service quality and service convenience from the end of the hotel guests and a two-way outline also from the end of the service provided by the hotel staff during the COVID-19 pandemic.

### **Recommendation**

The hotel may continue cashless payment transactions such as card transactions, however, the hotel may want to explore another type of cashless transaction such as the exploration of NFS payments. In addition, the hotel may create additional promotions and additional hotel experiences to capture more adventurous guests or travelers as the hotels in the region are starting to bounce back from the surge of economic impact brought by the pandemic.

Second, the hotel may not only focus on the guests whose lifestyles are adventurous rather they must put a high value on others such as the Promethean ones because they are the ones who are very meticulous based on the results and they are after the luxurious, extravagant, and a risk taker guests and knows how to use and updated on the technology as part of ease of use and in terms of service quality and convenience.

In addition, to further strengthen and to keep the standards of being a multi-use hotel as well as to continue its accreditation from the local and national agencies in the country, the hotel may review its training and development that will focus on the applied guest service quality and convenience. The management committee through the help of department heads, as well as the HRD should coordinate hand-in-hand for different micro-credentials and training available. In addition, the hotel should continue its accreditation with the DOT and other IATF agencies to further strengthen its image and as well as their credibility from the end of each guest.

A proposed model may be reviewed and used by these hotels to look into different variables that they may be lacking or need to improve as this will be a catalyst for the future-proof-ready individuals who are working in the hotel or lodging industry.

## References

- António, N., & Rita, P. (2021). COVID-19: The catalyst for digital transformation in the hospitality industry? *Tourism and Management Studies*, 17(2), 41–46. <https://doi.org/10.18089/tms.2021.170204>
- Benoit, S., Klose, S., & Ettinger, A. (2017). Linking service convenience to satisfaction: dimensions and key moderators. *Journal of Services Marketing*, 31(6), 527–538. <https://doi.org/10.1108/JSM-10-2016-0353/FULL/XML>
- Benoit, S., Klose, S., & Ettinger, A. (2017). Linking service convenience to satisfaction: dimensions and key moderators. *Journal of Services Marketing*, 31(6), 527–538. <https://doi.org/10.1108/JSM-10-2016-0353/FULL/XML>
- Berry, L. L., Seiders, K., & Grewal, D. (2002). Understanding service convenience. *Journal of Marketing*, 66(3), 1-17. <http://dx.doi.org/10.1509/jmkg.66.3.1.18505>
- Bharwani, S., & Mathews, D. (2021). Post-pandemic pressures to pivot: tech transformations in luxury hotels. *Worldwide Hospitality and Tourism Themes*, 13(5), 569–583. <https://doi.org/10.1108/WHATT-05-2021-0072>
- Braun, M. T. (2013). Obstacles to social networking website use among older adults. *Computers in human behavior*, 29(3), 673-680.
- Ciasullo, M. V., Montera, R., & Palumbo, R. (2020). Online content responsiveness strategies in the hospitality context: exploratory insights and a research agenda. *TQM Journal*. <https://doi.org/10.1108/TQM-12-2019-0299>
- George, D., & Mallery, P. (2003). *SPSS for Windows step by step: A simple guide and reference. 11.0 update—Fourth edition*. Boston: Allyn & Bacon.
- Dash, G., & Paul, J. (2021). CB-SEM vs PLS-SEM methods for research in social sciences and technology forecasting. *Technological Forecasting and Social Change*, 173, 121092. <https://doi.org/10.1016/j.techfore.2021.121092>
- Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, 13(3), 319–340. <https://doi.org/10.2307/249008>
- DOT ADMINISTRATIVE ORDER NO. 2021-007 (2021). *Official Gazette of the Republic of the Philippines*. <https://www.officialgazette.gov.ph/2021/10/18/administrative-order-no-2021-007/>
- Filimonau, V., Derqui, B., & Matute, J. (2020). The COVID-19 pandemic and organizational commitment of senior hotel managers. *International Journal of Hospitality Management*, 91. <https://doi.org/10.1016/J.IJHM.2020.102659>

- Gursoy, D., & Chi, C. G. (2020). Effects of COVID-19 pandemic on hospitality industry: a review of the current situations and a research agenda. *Journal of Hospitality Marketing & Management*, 29(5), 527-529. agenda. <https://doi.org/10.1080/19368623.2020.1788231>
- Johns, R. (2010). Likert items and scales. Retrieved from Survey Question Bank website: <http://www.surveynet.ac.uk/sqb/datacollection/likertfactsheet.pdf>
- Mehmood, S. M., & Najmi, A. (2017). Understanding the impact of service convenience on customer satisfaction in home delivery: Evidence from Pakistan. *International Journal of Electronic Customer Relationship Management*, 11(1), 23–43. <https://doi.org/10.1504/IJECRM.2017.086752>
- Memon, M. A., Cheah, J. H., Ramayah, T., Ting, H., Chuah, F., & Cham, T. H. (2019). Moderation analysis: issues and guidelines. *Journal of Applied Structural Equation Modeling*, 3(1), 1-11.
- Meuter, M. L., Ostrom, A. L., Roundtree, R. I., & Bitner, M. J. (2000). Self-service technologies: understanding customer satisfaction with technology-based service encounters. *Journal of Marketing*, 64(3), 50-64.
- Mohammed, M., Saeed, Q., Xizheng, Z., Abdulwase, R., & Al-Methali, M. A. (2021). Measuring the Relationship Between Service Quality and Customer Satisfaction in the Hotel Industry. *International Journal of Scientific and Research Publications*, 11(8), 336. <https://doi.org/10.29322/IJSRP.11.08.2021.p11644>
- Moon, H. Y., & Lee, B. Y. (2022). Self-service technologies (SSTs) in airline services: multi mediating effects of flow experience and SST evaluation. *International Journal of Contemporary Hospitality Management*, 34(6), 2176-2198.
- Morosan, C. (2021). An effective approach to modeling intentions to use technologies for social distancing in hotels. *Information Technology and Tourism*, 23(4), 549–573. <https://doi.org/10.1007/s40558-021-00216-3>
- Mukherjee, S., Baral, M. M., Venkataiah, C., Pal, S. K., & Nagariya, R. (2021). Service robots are an option for contactless services due to the COVID-19 pandemic in the hotels. *DECISION 2021* 48:4, 48(4), 445–460. <https://doi.org/10.1007/S40622-021-00300-X>
- Nunkoo, R., Teeroovengadum, V., Ringle, C. M., & Sunnassee, V. (2020). Service quality and customer satisfaction: The moderating effects of hotel star rating. *International Journal of Hospitality Management*, 91. <https://doi.org/10.1016/J.IJHM.2019.102414>
- Parasuraman, A. B. L. L., Zeithaml, V. A., & Berry, L. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. 1988, 64(1), 12-40.
- Park, S., Kwun, D. J., Park, J. Y., & Bufquin, D. (2021). Service Quality Dimensions in Hotel Service Delivery Options: Comparison between Human Interaction Service and Self-Service Technology. <https://doi.org/10.1080/15256480.2021.1935392>
- Sarfraz, Z., Sarfraz, A., Iftikar, H. M., & Akhund, R. (2021). Is COVID-19 pushing us to the Fifth Industrial Revolution (Society 5.0)? *Pakistan journal of medical sciences*, 37(2), 591–594. <https://doi.org/10.12669/pjms.37.2.3387>
- Sarstedt, M., Hair Jr, J. F., Cheah, J. H., Becker, J. M., & Ringle, C. M. (2019). How to specify, estimate, and validate higher-order constructs in PLS-SEM. *Australasian Marketing Journal*, 27(3), 197-211.
- Seiders, K., Voss, G., Godfrey, A., & Grewal, D. (2007). SERVCON: Developing and validating a multidimensional service convenience scale. *Journal of the Academy of Marketing Science*, 35(1), 144–156.

- Shahid Iqbal, M., Ul Hassan, M., & Habibah, U. (2018). Impact of self-service technology (SST) service quality on customer loyalty and behavioral intention: The mediating role of customer satisfaction. *Cogent Business and Management*, 5(1). <https://doi.org/10.1080/23311975.2018.1423770>
- Shin, H., & Kang, J. (2020). Reducing perceived health risk to attract hotel customers in the COVID-19 pandemic era: Focused on technology innovation for social distancing and cleanliness. *International Journal of Hospitality Management*, 91, 102664. <https://doi.org/10.1016/j.ijhm.2020.102664>
- Vitezić, V., & Perić, M. (2021). Artificial intelligence acceptance in services: connecting with Generation Z. *The Service Industries Journal*, 41(13-14), 926-946.
- Yallop, A., & Seraphin, H. (2020). Big data and analytics in tourism and hospitality: opportunities and risks. *Journal of Tourism Futures*, 6(3), 257–262. <https://doi.org/10.1108/JTF-10-2019-0108/FULL/PDF>