# Exploring the Nexus Among Internet Banking Service Quality, Customer Satisfaction, Age, and Gender : A Developing Country Perspective During COVID-19

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## Abstract

**During COVID-19, the banking industry saw a paradigm shift of customers from "traditional" to "online" platforms. This research explored the moderation effect of age and gender in the relationship between online banking service quality and customer satisfaction during COVID-19. The study used explanatory and accurate novel methods to study the relationship between online banking service quality and customer satisfaction in the Indian banking industry. Structural equation modeling was used for testing the relationship. Multi-group moderation technique was employed to explain the moderation effect. The study highlighted that age significantly moderated the relationship between responsiveness, competence, and customer satisfaction. Gender significantly moderated the relationship between competence and customer satisfaction. The study's novelty lies in finding the critical determinant of customer satisfaction in online banking during COVID - 19 and explaining the moderation effect of age and gender. Moreover, this study addressed feedback and complaint management, which has not been studied widely in the context of quality and satisfaction.**

***Keywords :*** **Internet banking, service quality, customer satisfaction, moderation effect, age, gender, structural equation modeling, online banking, COVID-19**

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The big bang blowout of technology has changed the face of the banking industry worldwide more than any other sector (Kirakosyan & Dănăiaţă, 2014). The internet has revolutionized how banks operate and has become the best channel to offer new and advanced banking products and services differently. The internet has become an essential source of all information (Malik & Dangi, 2021). Internet (or online) banking is a new type of information system which uses emerging techniques like the internet and the world wide web and has changed how customers perform various financial activities in the virtual space. A significant increase in consumer interest has been witnessed during the previous decade in internet banking. This has happened with the intensification of global competition and markets (Paul, 2020). The additional benefits of internet banking are convenience, accessibility, lower costs, accuracy, security, usefulness, user-friendliness, speed of delivery, personalization, flexibility, and ease of use (Geetha & Malarvizhi, 2012; Hanafizadeh et al., 2014; Santouridis & Kyritsi, 2014). However, numerous challenges exist for banks to operate in a dynamic and competitive environment. One of the most crucial challenges is understanding bank customers' changing needs. They are happy when they experience "no hassle" and achieve their goals (Paul et al., 2016). This requires incorporating financial management tools and a diverse portfolio of competitive assistance, fulfilling the requirements not met

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by conventional banking. Online customers demand improved levels of convenience, personal support, customized services, and security, in addition to an extensive range of products and services. Perceived usefulness, perceived ease of use and trust, and perceived quality significantly impact consumers' intentions to use internet banking services (Nagdev & Rajesh, 2018). Thus, bank managers must emphasize enhancing service quality (Islam et al., 2021).

COVID-19 has further added to the concerns of the customers. During the pandemic, a transitional shift towards internet banking has been experienced by customers across the globe. It has created many innovations and upgrade opportunities (Pillania, 2020). Since there have been increasing concerns over the transmission of viruses due to the exchange of cash, digital payments are being emphasized. Customers have shifted to internet banking for daily needs such as paying bills, transferring money, purchasing groceries, and shopping for brands. The dire need to meet a vital challenge concerning the reliability, responsiveness, and security of customers' personal information during online transactions, curbing cyber frauds during the pandemic, and above all, keeping the customer satisfied is at the helm of the research. It has further paved the way for the study. Therefore, banks must identify significant determinants of customer satisfaction (CS) during the COVID-19 pandemic, monitor their services' quality (SQ), and take essential measures to increase customer satisfaction.

This study answers two questions broadly:

- What dimensions of SQ significantly impact CS?
- Do age and gender moderate the impact of SQ on CS?

Numerous studies highlight the adoption rate of technology among males and females, how customer satisfaction among online banking users varies based on gender, and the influence of gender on service quality dimensions. However, the studies on the interaction effect of gender and age in the relationship between service quality dimensions and customer satisfaction remain a significant concern to be addressed. The study's novelty lies in identifying the critical predictors of CS in online banking during COVID-19 and explaining the moderation effect of age and gender in the association between internet banking service quality (IBSQ) and CS. Moreover, feedback and complaint management has not been studied widely in the context of quality and satisfaction.

This study will give an impetus to the service providers to focus on demographic characteristics such as age and gender while delivering adequate service quality to evoke customer satisfaction.

## Review of Literature

### *Internet Banking Service Quality (IBSQ) and Customer Satisfaction (CS)*

The term “service quality” has gained considerable traction in recent times. Parasuraman et al. (1988) explained SQ as the gap between consumers' perceptions of services delivered/offered and expected service. Several studies have examined the association of IBSQ with CS (Narteh, 2018; Yilmaz et al., 2018). CS is an essential factor for online banking services closely related to service quality measurement (Silvestri et al., 2017). Kotler and Keller (2012) illustrated the term “customer satisfaction” as “a person's feeling of pleasure or disappointment which resulted from comparing a product's perceived performance or outcome against his or her expectations” (p. 110). Studies highlight that high SQ enhances the probability of customer satisfaction (Kant & Jaiswal, 2017; Pooya et al., 2020).

Gupta and Bansal (2012) developed a five-dimensional model comprising safety, reliability, responsiveness, efficiency, and website to measure Internet banking service quality in India and also analyzed the impact of IBSQ on CS. However, CS is mainly influenced by the efficiency dimension, and the security/privacy dimension has the

maximum impact on the overall IBSQ. Raza et al. (2015) used the SERVQUAL model to explore the effect of service quality dimensions on customer satisfaction in Pakistan. A significant positive relationship was found between service quality dimensions (assurance, tangibility, reliability, responsiveness) and customer satisfaction. However, Raza et al. (2020) did not significantly find empathy associated with customer satisfaction. Raza et al. (2020) used the modified e-SERVQUAL model to explore the relationship between the two. Chandel and Vij (2019) identified and validated a six-factor structure (reliability, responsiveness, efficiency, security, ease of use, and ease of access) influencing E-banking service quality.

It is essential to find the determinants that create customer satisfaction or dissatisfaction. Jalal et al. (2011) saw the ease of use and usefulness as important significant sources of CS and credibility factors (security and privacy) as the most critical factor causing dissatisfaction. Sikdar and Makkad (2015) tested five elements of the online banking adoption model for determining the adoption of Internet banking and its contribution to the overall satisfaction level among online banking users in India. Extensive research has been conducted to study internet banking service quality dimensions on customer satisfaction in the banking industry. However, not all the service quality dimensions have a similar effect on customer satisfaction. Some dimensions induce a greater degree of satisfaction in comparison to others. Prior studies have shown a significant positive relationship between overall internet banking service quality and customer satisfaction (Rod et al., 2009). Comprehensive online banking products and services quality, online customer service quality, and information system quality significantly positively affect customer satisfaction (Baskar & Ramesh, 2010). Prior research studies have identified various factors influencing customer satisfaction, such as speed of delivery, accuracy, ease of use, customer support, a diverse range of products and services, feedback/complaint management, and user-friendly banking apps (Sadeghi & Heidarzadeh Hanzaee, 2010).

### *Ease of Use (EOU)*

It is a crucial factor that affects SQ and CS. Chandel and Vij (2019) identified and validated that ease of use influences E-banking service quality. Various researchers in the past have identified this particular dimension as being of utter importance in determining or affecting the level of satisfaction obtained by the users of online banking. EOU refers to the level of comfort that a customer or a user of the online banking facility encounters while accessing or using the various internet banking services. Therefore, it is essential to design a user-friendly interface to offer functionality and ease of use so that customers can easily find the required information to complete the transaction. Various previous studies identified that the variables such as ease of use and customer support significantly affected customer satisfaction towards internet banking transactions.

### *Feedback/Complaint Management*

A feedback/complaint management system is vital in satisfying customers' needs through solving their queries timely and generating sales (Lohse & Spiller, 1998). It is a must to listen to customer complaints and provide immediate solutions. Feedback or complaints management has been regarded as a crucial factor impacting customer satisfaction in the banking sector.

### *Product Portfolio*

Customers using online services tend towards various products and services to fulfill their diverse needs. A competitive product portfolio is the most critical and crucial factor in satisfying customers and generating sales (Lohse & Spiller, 1998). Product differentiation and customization of services are needed to achieve a competitive advantage (Madu & Madu, 2002). Also, introducing a new array of services and products and customizing them in

accordance with the customers' changing needs and developments in the market helps satisfy customers. Thus, offering a wide range of products/services preferred by target customers is critical to satisfying customers.

### *Banking Apps*

Banking apps are the most helpful and easily accessible tool for online transactions. The COVID-19 pandemic has disrupted physical bank operations and increased uncertainty in the environment for retail banks and individual customers. This crisis period demanded that the banks be even more effective in offering online banking services. Understanding this situation, banks have developed improved internet banking apps/mobile apps to address the distinct needs of online banking users (Gera et al., 2020). Perceived usefulness (PU) is the most significant factor in banking apps' usage and adoption.

### *Moderation Variables – Age and Gender*

After an extensive review, the relationship between SQ and CS has been well recognized. However, the impact of service quality dimensions on customer satisfaction may not be the same among different genders and age groups. Past literature has reflected the relevance of age and gender in IBSQ. Many studies have shown the effect of users' demographic characteristics in ascertaining the adoption pace of internet banking services (Izogo et al., 2012; Onyia & Tagg, 2011). Chauhan et al. (2016) examined the impact of demographic characteristics on the adoption behavior of E-banking. All the demographic variables except marital status significantly affected the adoption of e-banking. Young individuals are more attuned to using advanced internet-related technologies. As a result, younger individuals are more engaged in using the newest technology platforms for their daily requirements than older individuals (McMillan & Morrison, 2006). Males are more inclined to use internet banking (Akinci et al., 2004) than females. Therefore, age and gender are relevant moderating variables impacting the satisfaction level of service users. Our study explores the moderating effects of age and gender in the association of dimensions of SQ and CS concerning Internet banking products and services.

## Research Model and Hypotheses

This section presents the hypotheses based on the association between IBSQ dimensions and CS. It also analyzes the moderation impact of age and gender on the relationship between SQ dimensions and CS. Reliability, responsiveness, competence, and security have been used as independent variables of the study.

### *Reliability*

Reliability is the ability to do the promised service dependably and accurately. Banks need to deliver the promised service accurately the first time. It is the fundamental aspect of measuring SQ in internet banking. Customers are more inclined towards internet banking when they identify it as a reliable and trustworthy network to get services (Sharif & Raza, 2017). Previous researchers found reliability as the strongest predictor of CS. It is the most essential and fundamental factor that significantly affects customer satisfaction (Pakurár et al., 2019). In internet banking services, reliability is claimed to have the most substantial impact on customer satisfaction (Hammoud et al., 2018). Raza et al. (2015) espoused the association between reliability, tangibility, assurance, and responsiveness with CS. Many researchers (Pakurár et al., 2019) have highlighted reliability as a significant service quality aspect. This gives way to the following hypothesis:

- **H1 :** Reliability significantly impacts customer satisfaction.

### *Responsiveness*

This dimension relates to the timely delivery of services by employees and then dealing with customer problems satisfactorily and promptly. It implies a prompt response to user queries. Responsiveness acts as a dominant factor and significantly impacts customers' expected level of satisfaction and service quality (Sharma & Verma, 2015). Past literature has identified responsiveness as influential in predicting Internet banking users' satisfaction levels (Liao & Cheung, 2008; Vencataya et al., 2019). Responsiveness is considered the most crucial element in fulfilling expectations and enhancing the satisfaction level of e-banking users (Misbach et al., 2013; Sardana & Bajpai, 2020). Fida et al. (2020) indicated an association between responsiveness and CS. Hence, it is postulated that :

- **H2 :** Responsiveness significantly impacts customer satisfaction.

### *Competence*

Parasuraman et al. (1985) defined competence as possessing the required skills and knowledge to perform the service. Ariff et al. (2014) highlighted that competence is reflected through the factors such as efficiency, fulfillment, proper system availability, website design, and proper guidance, which is crucial for ensuring that the quality of electronic service quality would generate satisfaction and loyalty. Hence, it is posited that :

- **H3 :** Competence significantly impacts customer satisfaction.

### *Security*

Security refers to protecting users' personal information from unauthorized modification. Security is the primary concern for customers on Internet-based electronic banking transactions as it includes colossal money value transfers led among an open network (Liao & Cheung, 2002). In the online environment, payment security is crucial (Subrahmanya Sastry & Madhusudhana Rao, 2017). Customers want safety, the privacy of ID and password, and frequent reminders for password change (Srivastav & Mittal, 2016). E-commerce services providers should focus more on enhancing the functional capabilities of their websites to make them more secure; e-security seals increase consumers' trust in websites (Chien-Ta Ho & Oh, 2009). Security issues have become a common concern for private and public sector bank customers (Srivastav & Mittal, 2016). These observations motivate the following hypothesis:

- **H4 :** Security significantly impacts customer satisfaction.

### *Moderating Variables*

Previous studies show a significant impact of consumers' demographics, such as age and gender, on the association of IBSQ and CS. Prior research has also explored the influence of age and gender on the usage of internet-driven technologies and continuance intention toward online services (Al-Somali et al., 2009; Chan & Chong, 2013; Reddy & Rao, 2019; Tarhini et al., 2014a, 2014b; Teo, 2001; Venkatesh et al., 2014). Age significantly affected all the factors (perceived usefulness, perceived ease of use, intention to use, attitude, social norms, and perceived risk) measuring e-banking adoption behavior (Chauhan et al., 2016). This study attempts to study the role of consumer demographics in the association of IBSQ and CS. Therefore, the following hypotheses are proposed:

- **H5 :** Age significantly moderates the association between reliability and customer satisfaction.

- **H6 :** Gender significantly moderates the association between reliability and customer satisfaction.
- **H7 :** Age significantly moderates the association between responsiveness and customer satisfaction.
- **H8 :** Gender significantly moderates the association between responsiveness and customer satisfaction.
- **H9 :** Age significantly moderates the association between competence and customer satisfaction.
- **H10 :** Gender significantly moderates the association between competence and customer satisfaction.
- **H11 :** Age significantly moderates the association between security and customer satisfaction.
- **H12 :** Gender significantly moderates the association between security and customer satisfaction.

## Research Methods

### *Construct Measurements*

This research study comprises of two broad constructs viz — IBSQ and CS. IBSQ has four sub-dimensions: reliability, responsiveness, competence, and security. Customer satisfaction has four sub-dimensions: ease of use, product portfolio, feedback/complaint management, and banking apps. The scale incorporated a total of 34 statements. Each statement was rated on a 5-point Likert scale. On a scale, 1 meant *strongly disagree*, and 5 meant *strongly agree*. For analysis, the composite score (sum of all four sub-dimensions) of customer satisfaction was considered.

The sample statement for reliability is, "The bank performs the service correctly the first time." The sample statement for responsiveness is, "I receive prompt responses to my requests by e-mail or other means." The sample statement for competence is, "The customer care executives have the knowledge to answer my questions." A sample statement for security is, "I feel safe in providing sensitive information like credit card details for online transactions."

For the study, the four dimensions of IBSQ are reliability, responsiveness, competence, and security. These four have been studied independently. However, to measure customer satisfaction, the composite score of ease of use, complaints management, product portfolio, and banking apps have been considered.

### *Participants*

The study used a descriptive research design. The data were collected from corporate professionals having accounts in private, public, and foreign banks operating in Delhi-NCR (National Capital Region) for at least 10 years till 2020 and offering online banking services to these customers. The study was conducted for six months, from October 2020 to March 2021. The customers taken for the study have been the online banking users of the stipulated banks. The sample had the corporate professionals' group undertaking online transactions in India; 49% of the respondents were less than 30 years of age, and 51% of the respondents were aged 30 years and above; 30.57% of them were men, and 43% were women; 28.3% of the respondents were single, 70.3% were married, and 1.5% were widowers. Of the respondents, 37.8% were business professionals, 28.3% were professionals, and 19.3% worked in corporate houses. Table 1 shows the descriptive analysis of the constructs under study.

The descriptive statistics of the constructs show that customers' overall perception of internet banking improves with age. The female customers exhibited better perception concerning reliability with a mean score of 15.09, followed by men with a mean score of 14.89. The female customers found the internet banking services more responsive, with a mean score of 22. The male customers found internet banking more competent, with a mean score of 10.79. The overall service quality perception towards internet banking services was higher in the

**Table 1.** ***Descriptive Analysis of the Constructs Under Study***

| Age | | *Rel* | *Re* | *Cmp* | *EOU* | *PP* | *S* | *Fb* | *App* | *SQ* | *CS* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Age less than 30 yrs** | Mean | 14.65 | 21.42 | 10.54 | 17.92 | 17.40 | 12.17 | 10.54 | 14.79 | 58.78 | 60.65 |
| | Std. Deviation | 4.03 | 5.84 | 2.89 | 5.19 | 5.20 | 5.04 | 3.12 | 4.41 | 16.48 | 16.75 |
| | Std. Error of Mean | 0.36 | 0.52 | 0.26 | 0.46 | 0.46 | 0.45 | 0.28 | 0.39 | 1.46 | 1.49 |
| **30 years and above** | Mean | 16.07 | 23.54 | 11.67 | 19.58 | 18.09 | 13.90 | 11.55 | 15.49 | 65.17 | 64.71 |
| | Std. Deviation | 2.59 | 4.35 | 2.17 | 3.89 | 4.51 | 3.94 | 1.99 | 3.43 | 11.54 | 12.70 |
| | Std. Error of Mean | 0.31 | 0.52 | 0.26 | 0.47 | 0.54 | 0.47 | 0.24 | 0.41 | 1.39 | 1.53 |
| **Male** | Mean | 14.89 | 21.42 | 10.79 | 17.88 | 17.02 | 12.56 | 10.76 | 14.56 | 59.65 | 60.22 |
| | Std. Deviation | 3.22 | 4.86 | 2.59 | 4.37 | 4.43 | 3.87 | 2.47 | 3.49 | 13.36 | 13.25 |
| | Std. Error of Mean | 0.21 | 0.32 | 0.17 | 0.29 | 0.29 | 0.26 | 0.16 | 0.23 | 0.88 | 0.88 |
| **Female** | Mean | 15.09 | 22.00 | 10.53 | 18.42 | 16.44 | 13.40 | 10.47 | 15.06 | 61.02 | 60.38 |
| | Std. Deviation | 3.66 | 5.39 | 2.77 | 4.95 | 5.57 | 4.72 | 2.70 | 3.73 | 14.88 | 15.61 |
| | Std. Error of Mean | 0.28 | 0.41 | 0.21 | 0.38 | 0.42 | 0.36 | 0.21 | 0.28 | 1.13 | 1.19 |

***Note.*** product portfolio *(PP)* ; reliability *(Rel)* ; responsiveness *(Re)* ; competence *(Cmp)* ; Security *(S)* ; Ease of use *(EOU)* ; Feedback/Complaint Management *(Fb)* ; banking apps *(App)* ; Service quality (*SQ)* ; customer satisfaction *(CS)*.

case of females as compared to males. The overall SQ perception of customers and the satisfaction level of customers over 30 years of age was higher, with a mean score of 65.17 for service quality, and a mean score of 64.71 for customer satisfaction.

### *Research Instrument*

A scale defined by Yang et al. (2004) was considered for this study. A standardized scale questionnaire with some modifications was used to gather information for this research. Further, to understand the effect of IBSQ on CS, two dimensions were added to suit the sample area's requirements. The final questionnaire included 34 items to measure six constructs. The questionnaire was divided into two parts. The first section included the questions related to the demographic profile of the sample. The second part collected information on the constructs identified. A pilot study was conducted on 100 respondents, including corporate professionals using online banking in the banks in Delhi-NCR. Cronbach's alpha was 0.87, which was more significant than .75. Thus, as a rule of thumb in such studies, it was reliable. The survey instrument was found to be highly valid. Thus, it was used for the final data collection for analysis.

### *Sampling*

Purposive sampling is used in the research, and the banks are located in different geographical locations in Delhi/NCR. The judgment criteria was that they should have been operating for at least 10 years and should have been offering internet banking services. The sample size is 400. With this sample size, the marginal error calculated is less than 5%. Thus, there is a 95% confidence level, so the sample size is justified.

## Data Analysis and Results

The structural equation modelling approach was applied using AMOS 24 software to analyze the data empirically.

First, the data's reliability and validity were checked and trailed by confirmatory factor analysis. The structural assessment followed the evaluation of the measurement model. The moderation impact of gender and age was checked on the said relationships. This was done using multi-group analysis under SEM.

### *Reliability and Validity Results*

The reliability and validity of the constructs are presented in Table 2. Two types of validity are assessed in the study, that is, convergent validity and discriminant validity. It can be observed from Table 2 that CR ranges from .896 to .942. The CR is more than the accepted range of .7. This denotes that the reliability of the data is fit for use in the study. The average variance extracted is more than .5 (ranging from .686 to .801), further demonstrating the convergent validity. The discriminant validity is confirmed by considering AVE, MSV, and ASV.

### *Measurement Model*

The measurement model is developed and assessed after performing confirmatory factor analysis. Table 3 shows that the model fit measures demonstrate a perfect fit. The model fit indices are C-Min/*df* = 4.6; RMSEA =.09; CFI =.912; NFI =.916; GFI =.931. According to Baumgartner and Homburg (1996), the goodness of fit (GFI) of more than .9 is a good fit. Hu and Bentler (1999) state that the NFI of more than .9 is a good fit. Since, in the present

**Table 2.** ***Results of Reliability and Validity of the Constructs***

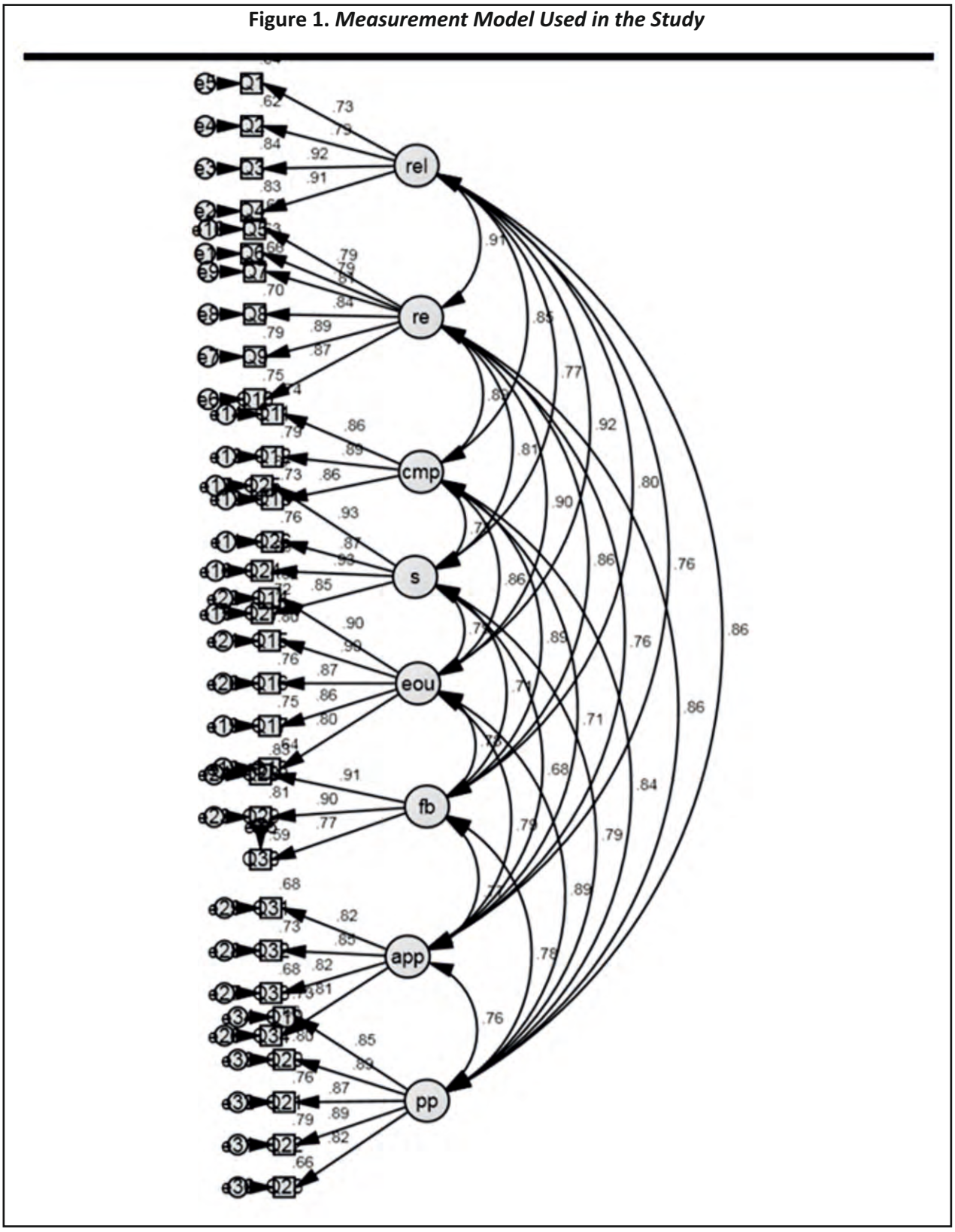
| Factors | CR | AVE | MSV | ASV | *PP* | *Rel* | *Re* | *Cmp* | *S* | *EOU* | *Fb* | *App* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***PP*** | 0.937 | 0.748 | 0.797 | 0.683 | 0.865 | | | | | | | |
| ***Rel*** | 0.906 | 0.709 | 0.850 | 0.706 | 0.856 | 0.842 | | | | | | |
| ***Re*** | 0.931 | 0.692 | 0.835 | 0.736 | 0.862 | 0.914 | 0.832 | | | | | |
| ***Cmp*** | 0.902 | 0.754 | 0.799 | 0.685 | 0.838 | 0.853 | 0.894 | 0.868 | | | | |
| ***S*** | 0.942 | 0.801 | 0.651 | 0.571 | 0.788 | 0.767 | 0.807 | 0.733 | 0.895 | | | |
| ***EOU*** | 0.938 | 0.753 | 0.850 | 0.720 | 0.893 | 0.922 | 0.901 | 0.857 | 0.790 | 0.868 | | |
| ***Fb*** | 0.896 | 0.742 | 0.792 | 0.638 | 0.776 | 0.797 | 0.856 | 0.890 | 0.713 | 0.775 | 0.862 | |
| ***App*** | 0.897 | 0.686 | 0.619 | 0.560 | 0.764 | 0.759 | 0.760 | 0.710 | 0.683 | 0.787 | 0.769 | 0.828 |

***Note.*** Composite reliability (CR); average variance extracted (AVE); average shared variance (AVE) ; maximum shared variance (MSV); product portfolio *(PP)* ; reliability *(Rel)* ; responsiveness *(Re)* ; competence *(Cmp)* ; Security *(S)* ; Ease of use *(EOU)* ; Feedback/Complaint Management *(Fb)* ; banking apps *(App)* ; Service quality *(SQ)* ; customer satisfaction *(CS).*

**Table 3.** ***Overall Fit Indices of the Measurement Model***

| | Values |
|---|---|
| C- Min | 2862 |
| Degree of Freedom | 622.17 |
| C-Min/*df* | 4.6 |
| Room Mean Square Error of Approximation (RMSEA) | . 09 |
| Comparative Fit Index (CFI) | .912 |
| Normalized Fit Index (NFI) | .916 |
| The Goodness of Fit (GFI) | .932 |

**Figure 1.** ***Measurement Model Used in the Study***



study, the values of GFI, CFI, and NFI are coming out to be more than .9, this shows that the model exhibits a great fit, and hence, it can proceed with the structural analysis. Had it not been the case, the respecification of the model would have been called. C min/*df* of less than 5 also shows a good fit (Schumacker & Lomax, 2004). The model's fitness is also confirmed by RMSEA, which is less than .1 (Hu & Bentler, 1999). The measurement model used for the study is depicted in Figure 1.

### *Structural Model*

After confirming the validity and reliability of the results and checking if the measurement model demonstrates a good fit, the structural model is made in AMOS. Further, the results are checked. The structural model results are presented in Table 4, and the model is presented in Figure 2.

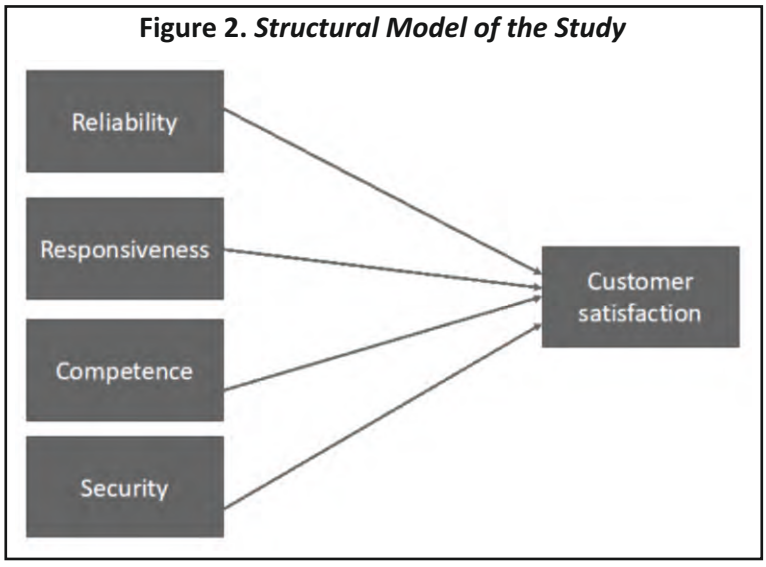
Since the *p* - values in all the four structural relationships come out to be less than. 05, it can be concluded that all the hypotheses H1, H2, H3, and H4 are supported. It can be observed from the above results that reliability significantly affects CS; responsiveness significantly impacts customer satisfaction; competence impacts customer satisfaction; and also security impacts customer satisfaction. Moreover, looking at the beta values or the standardized regression weights (competence (beta = 4.502); reliability concerns (beta = 3.706), responsiveness (beta = 2.42), and security (beta = 2.617)), it can be inferred that the competence dimension of SQ is the strongest predictor of CS.

**Table 4.** ***Structural Model Used in the Study***

| Hypotheses | Standardized Regression Weight | Standard Error | Critical Ratio | *p*-value | Remarks |
|---|---|---|---|---|---|
| *Rel* → *CS* | 3.706 | .168 | 22.095 | .000 | Accepted |
| *Re* → *CS* | 2.427 | .070 | 34.487 | *** | Accepted |
| *Cmp* → *CS* | 4.502 | .146 | 30.887 | *** | Accepted |
| *S* → CS | 2.617 | .104 | 25.069 | *** | Accepted |

***Note.*** reliability *(Rel)* ; responsiveness *(Re)* ; competence *(Cmp)* ; Security *(S)*.

**Figure 2.** ***Structural Model of the Study***



### *Moderation Impact of Demographic Variables*

The moderation effect of age and gender is necessary since the respondents belonged to different age groups and genders. The multi-group analysis technique is used to analyze the moderation effect of age and gender on the relationship between the SQ dimensions and CS. Data were subdivided into two categories – age and gender.

### *Age*

Two age groups are considered for the study – the respondents aged less than 30 years and those aged 30 and above. Table 5 discusses the *p*-values across diverse age groups. The table shows the proposed relationships and the related statistics across the two age groups. It can be observed from the table that the hypothesis stating age significantly moderates the association between responsiveness and CS is supported, and age moderating the association between competence and CS is supported. Hence, it can be inferred that age significantly moderates the association between responsiveness and customer satisfaction and competence and customer satisfaction.

### *Gender*

Two gender groups are considered for the study – males and females. Table 6 shows the *p* - values which were obtained for the relationships across males and females. The table shows the proposed relationships and related statistics for the male and female respondents. It can be observed from the table that the hypothesis stating gender significantly moderates the association between competence and CS is supported.

**Table 5.** ***Standard Estimates, p - values, Standard Error, Critical Ratio of Different Age Groups***

| Proposed Hypotheses | Age less than 30 years | | | | Age more than 30 years | | | | *Z* - value | Results |
|---|---|---|---|---|---|---|---|---|---|---|
| | Estimates | *p* - value | Standard Error | Critical Ratio | Estimates | *p* - value | Standard Error | Critical Ratio | Estimates | |
| *CS* ← *Rel* | .892 | .000 | .168 | 22.1 | .807 | .000 | .190 | 17.42 | –1.55 | Not supported |
| *CS* ← *Re* | 2.721 | *** | .081 | 33.686 | 2.255 | *** | .130 | 17.410 | –3.05 | Supported |
| *CS* ← *Cmp* | 5.185 | *** | .231 | 22.401 | 4.173 | *** | .221 | 18.876 | –3.16 | Supported |
| *CS* ← *S* | 2.717 | *** | .171 | 15.935 | 2.645 | *** | .175 | 15.147 | –.296 | Not supported |

**Table 6.** ***Standard Estimates, p- values, Standard Error, Critical Ratio of Males and Females***

| Proposed Hypotheses | Female | | | | Male | | | | *Z* - value | Results |
|---|---|---|---|---|---|---|---|---|---|---|
| | Estimates | *p* - value | Standard Error | Critical Ratio | Estimates | *p* - value | Standard Error | Critical Ratio | | |
| *CS* ← *Rel* | 14.890 | .000 | .213 | 69.787 | 15.093 | .279 | .279 | 54.108 | –1.186 | Not supported |
| *CS* ← *Re* | 2.371 | *** | .090 | 26.486 | 2.502 | *** | .111 | 22.476 | .914 | Not supported |
| *CS* ← *Cmp* | 4.247 | *** | .190 | 22.384 | 4.824 | *** | .224 | 21.555 | 1.969 | Supported |
| *CS* ← *S* | 2.721 | *** | .138 | 19.733 | 2.568 | *** | .159 | 16.125 | –.727 | Not supported |

## Discussion

This study's central conjuncture revolves around estimating the impact of IBSQ on CS. A total of 10 hypotheses were postulated for the study. H1 tests the positive association between reliability and CS. This hypothesis is supported by previous research findings that found reliability to be a strong predictor of CS (Narteh, 2018). H2 tests the positive association between responsiveness and customer satisfaction. Responsiveness is found to be a critical determinant of customer satisfaction. H3 tests the positive association between competence and customer satisfaction (Ariff et al., 2014). H4 tests a positive association between security and customer satisfaction. So, all four hypotheses, H1, H2, H3, and H4, are supported. The results are also supported by previous research findings (Liao & Cheung, 2008; Raza et al., 2015). Of the four significant SQ dimensions affecting the CS, competence is most important, as it is statistically supported (bears the highest regression weight). Ariff et al. (2014) espoused that competence is reflected through efficiency, fulfillment, proper system availability, website design, and guidance. In the present COVID scenario, competence becomes the most crucial service quality factor. However, the findings of our study contradict the previous research pointing toward reliability as the original core dimension of service quality (Parasuraman et al., 1988).

The study shows that female customers exhibited better perception concerning reliability with a mean score of 15.09, followed by men (mean score = 14.89). Women customers found internet banking services more responsive, with a mean score of 22. The male customers found internet banking more competent, with a mean score of 10.79. The overall service quality perception towards internet banking services was higher in the case of females as compared to males. The overall service quality perception of customers and the satisfaction level of customers over 30 years of age were higher, with a mean score of 65.17 for service quality and a mean score of 64.71 for customer satisfaction.

Further, this study explores the moderation impact of age and gender on the association of SQ dimensions and CS. Age significantly moderates the association between SQ dimensions and CS, but the moderation impact is insignificant for the other two. The hypothesis stating that age significantly moderates the relationship between responsiveness and CS is supported, and also, the hypothesis stating that age moderates the association between competence and customer satisfaction is also supported. Hence, it can be inferred that age significantly moderates the association of responsiveness and CS and competence and CS. Hypothesis H10 states that gender significantly moderates the association between competence and customer satisfaction. Moreover, tests show that gender does not moderate the effects of the other three service quality dimensions. H10 is supported, while H6, H8, and H12 are not. Hence, it can be inferred that gender significantly moderates the association between competence and customer satisfaction.

## Implications

### *Theoretical Implications*

First, the study uses concepts from the TAM theory to narrow the existing gap between the current understanding of the association among the dimensions of IBSQ and CS. Furthermore, the findings, such as competence, are the strongest predictor of CS and add to the current body of knowledge. By far, studies have concluded that reliability is the strongest predictor. Secondly, the study significantly adds to the already existing knowledge and behavior of age and gender concerning the constructs under study. The investigation of the association between dimensions of service quality and customer satisfaction offer new insights into the pathways and interaction. Thirdly, the moderation effect of age and gender adds new perspectives to the research done so far. The study testifies the model highlighting the moderation effect of age and gender in the relationship between IBSQ and CS. This adds fresh perspectives to the already existing literature.

### *Practical Implications*

The study highlights that it is essential for banks to emphasize offering reliability, responsiveness, competence, and security. They should allocate resources for applying these dimensions to satisfy the customer's needs more effectively and efficiently. The primary focus in these times should be on the competence of the banks over others in terms of reflections stated by Ariff et al. (2014). Banks should invest more in upgrading technological infrastructure to provide more swift, secure, and accurate online banking services to customers in an environment of uncertainty during COVID-19. Also, bank officials must continuously conduct training sessions to provide more prompt and responsive bank services to create greater customer satisfaction. In the present COVID-19 pandemic situation worldwide, when banks are going for fully digital banking solutions, offering a competitive product portfolio has become the need of the hour to satisfy diverse customer needs. Ensuring the redressal of customer complaints through a proper feedback/complaint management system would help. Bank management can offer user-friendly banking apps for speedy access to online banking services. Application developers should build more efficient internet banking apps to improve online banking end users' experiences. It is recommended that banks address the needs of different age groups with different strategies. Banks need to explore the expectations of male and female customers and formulate different strategies for male and female customers.

## Limitations of the Study and Scope for Future Research

The study has a few limitations. First, the study is cross-sectional. A longitudinal study would have added significant perspectives. Second, the study is limited to the geographies of India only. Third, the study uses a data set comprising of only 400 respondents. However, the study has immense future scope. This study may be replicated in different cultural settings, and then comparative results may be drawn. Second, longitudinal studies can be conducted with additional service quality dimensions. The study sets the future agenda in exploring the mediation effects of some critical dimensions in the moderation effects of age and gender in the IBSQ and CS relationship.

## Authors' Contribution

Dr. Meha Joshi and Dr. Richa Dabas conceived the idea of research. Dr. Richa Dabas extracted research papers of high repute, filtered these based on keywords, generated concepts and codes relevant to the study design, and collected the data. Dr. Meha Joshi developed a quantitative design to analyze the data and performed the data analysis to draw the results.

## Conflict of Interest

The authors certify that they have no affiliations with or involvement in any organization or entity with any financial or non-financial interest in the subject matter or materials discussed in this manuscript.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