

AN EMPIRICAL STUDY OF ONLINE TRADING IN INDIAN STOCK MARKET

DR. VIDUSHI SHARMA

Assistant Professor, Department of Commerce, Government College Chamba, Himachal Pradesh

Abstract

The present study aims at recognizing the factors that affects the satisfaction level of investors about online share trading. In this study we identify the attributes of the service quality perceived by the individual investor of Indian Stock Market. For this purpose SERVQUAL scale has been used to measure the investor's perception on the quality of services. Originally ten dimensions of service quality were proposed which were reliability, responsiveness, competence, access, courtesy, communication, credibility, understanding the consumer and tangibles. So in this research paper the SERVQUAL method with respect to five dimensions, purified from the original ten dimensions has been used that are Empathy, Reliability, Responsiveness, Assurance and Security. In this analysis nineteen variables explore the investor's perception about the services provided to them. Study area of the research includes three cities of North India that are New Delhi, Chandigarh and Shimla. Primary data were acquired through the use of well structured questionnaire from the sample size of 450 respondents. Responses are generated on a five point likert scale to measure the perception of service quality indicating as (5) Strongly Agree (4) Agree (3) Neutral (2) Disagree (1) Strongly Disagree. The collected primary data were then analyzed by using factor analysis.

Keywords: Indian Stock Market, Investor perception, Online Trading, SERVQUAL

INTRODUCTION

Stock exchange plays a very important role in the growth of country's economy. As individual investors are the main customer of stock market so it becomes important to understand the needs of the investors which directly affects the retention of investors and also attracts potential investors. With the aim of sustaining long term relationships with their investors, many financial institutions have changed their strategic focus to emphasize investor retention¹. With the intervention of new technologies, almost all of the stock markets are using internet as a new tool to offer the investors variety of services. By using internet the trading process of investment in stock market has been changed. Online trading provides the investors a direct interact with service oriented computer systems for making their own investment decisions. Online trading is defined as a process of trading financial products especially stocks over the internet and online stock trading site that helps traders or customers to buy and sell the financial products over the internet².

Instrument Reliability: To estimate the reliability and the validity of questionnaire Cronbach's Alpha has been used. Cronbach's Alpha measures the reliability of the different categories and consists of estimates of how much variation in scores of different variables is due to change or random errors.⁴

Table 1: Reliability Statistics

Cronbach's Alpha	No. of Items
.899	19

Internal reliability according to Hair et al., the acceptable lower limit is 0.70; however some researchers found 0.60 is acceptable for factor analysis. Table 1 summarizes the Cronbach's Alpha for overall dimensions. The results indicate that, in total the questionnaire is reliable and valid. Scale for this study is considered to have good reliability with a Cronbach's Alpha value of 0.899.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy and Bartlett's Test of Sphericity: KMO statistics measures sampling adequacy for each variable in the model and for the complete model. This test is a measure of the proportion of variance among variables that might be common variance. The lower the proportion, the more suitable data is. The KMO index ranges from 0 to 1, with 0.50 considered suitable for factor analysis^{8&9}. Another test is Bartlett's test which determines that the samples are from the populations with equal variances.

Table 2: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.784
Bartlett's Test of Sphericity	Approx. Chi-Square	5328.437
	Df	171
	Sig.	.000
Source: Primary Probe		

It is analyzed in Table 2 that the KMO Measure is 0.622, which implies the adequacy of the samples and the factor analysis is appropriate for data. As the Bartlett's Test of Sphericity is significant if its value is less than 0.05. In the above table it is .000 Means the significance level is small enough to reject the null hypothesis of 'samples are from population having equal variance.'

Communalities: Communalities are the proportion of each variable's variance that can be explained by the principal components. It is also the sum of squared factor loadings. In a Principal Component Analysis the initial value of the

communality is always one and the extraction value is the proportion of explained variance of each variable by the principal component.

Table 3: Communalities

S. No.	Variables	Initial	Extraction
1.	Investors feel secure in providing personal information.	1	.795
2.	Risk associated with the transaction is low.	1	.788
3.	Stock exchange will give investors individual attention.	1	.710
4.	Stock exchange will have operation hours convenient to all their investors.	1	.682
5.	Stock exchange will have brokers who give investor personal attention.	1	.637
6.	Stock exchange will have investor's best interest at heart.	1	.711
7.	Brokers on stock exchange will understand the specific needs of their investors.	1	.792
8.	When the stock exchange promises to do something by a certain time it does so.	1	.828
9.	When investors have a problem, stock exchange shows a sincere interest in solving it.	1	.751
10.	The stock exchange performs the service right the first time.	1	.492
11.	The stock exchange insists on error free records.	1	.695
12.	Brokers tell you exactly when services will be performed.	1	.785
13.	Brokers give you prompt services.	1	.794
14.	Brokers are always willing to help you.	1	.565
15.	Brokers are never too busy to respond to your request.	1	.639
16.	The behavior of brokers in stock exchange will instill confidence in investors.	1	.602
17.	Investors of stock exchange will feel safe in their transactions.	1	.670
18.	Brokers on stock exchange will be consistently courteous with investors.	1	.751
19.	Brokers on stock exchange will have knowledge to answer investor's questions.	1	.795

Source: Extraction Method: Principal Component Method

The initial and extraction values of all the derived variables have been presented in Table 3. It is observed from the analysis that all the identified variables have significant values and these variables have been found to be a part of further analysis.

Total Variance Explained: As we have to identify the minimum number of factors that would account for the maximum portion of variance of the original variables. Principal Component Analysis has been applied to reduce the number of factors with an Eigen Value greater than one and a cumulative percentage of variance explained being greater than 50% is the criterion used in determining the number of factors¹⁰.

Table 4: Total Variance Explained

Component	Initial Eigen Values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.244	38.125	38.125	7.244	38.125	38.125	3.401	17.898	17.898
2	1.929	10.151	48.276	1.929	10.151	48.276	2.915	15.341	33.240
3	1.641	8.637	56.913	1.641	8.637	56.913	2.758	14.517	47.756
4	1.383	7.277	64.190	1.383	7.277	64.190	2.608	13.729	61.485
5	1.286	6.770	70.960	1.286	6.770	70.960	1.800	9.475	70.960
6	.849	4.468	75.429						
7	.732	3.854	79.283						
8	.690	3.634	82.917						
9	.532	2.802	85.719						
10	.483	2.544	88.262						
11	.408	2.149	90.411						
12	.381	2.006	92.418						
13	.343	1.803	94.221						
14	.299	1.573	95.793						
15	.249	1.308	97.101						
16	.181	.952	98.053						
17	.151	.794	98.847						
18	.119	.629	99.476						
19	.100	.524	100.000						

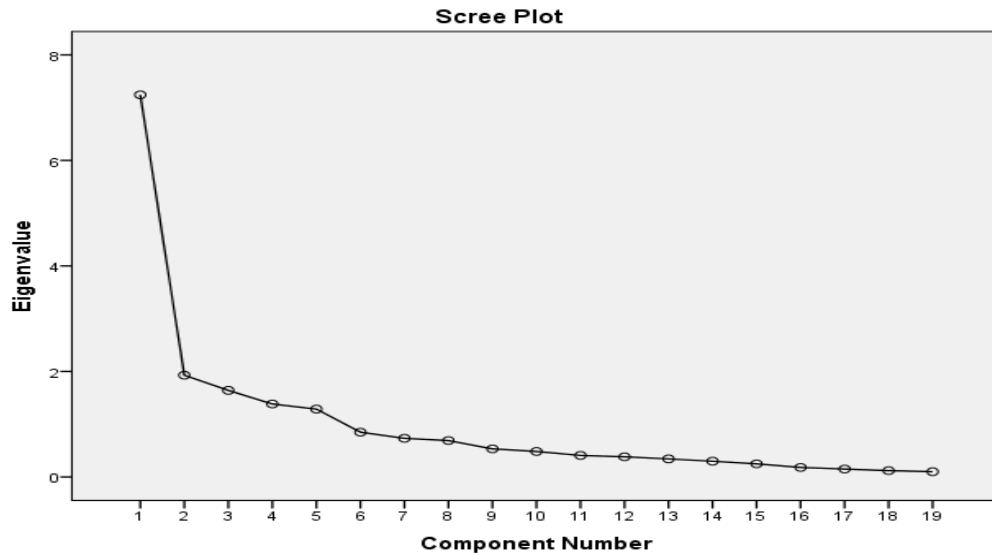
Source: Extraction Method: Principal Component Method

In the present study an attempt has been made to analyze the significant factors which have been extracted from the nineteen variables (Table 4). These factors are arranged in the descending order based on the most explained variance. Only those variables are selected as significant factors whose Eigen value is more than one and that explain a lot of variance. In our case five factors have been derived from nineteen variables, representing the impact of online share trading on investor's satisfaction, which accounts a cumulative variance of 70.960%. Rest of the variables has very low percentage of variance so they are insignificant for analysis.

Scree Plot: The scree plot shows the Eigen values of all the variables in descending order whether they are significant or not. This analysis has been

applied in order to identify the factors to be considered for the purpose of our study by looking for a “big gap” or an “elbow” on scree plot.

Figure 1



In our study the factor analysis has been conducted on nineteen different variables related to online share trading. Above scree plot shows that five factors out of those nineteen variables explain most of the variability because the graphical line becomes more straightens after 5th factor. Remaining of the variables that makes the almost straight line explains a very small portion of the variability and hence they are insignificant.

Rotated Component Matrix: Rotated Component Matrix which has been applied in our study clubs the different variables under prime five factors which influence the individual investor’s satisfaction towards online share trading in the Indian Stock Market. All of these five extracted factors have significant factor loadings. Each loading factor represents the partial correlation between the variable and the rotated factor.

Table 6: Rotated Component Matrix

	Component				
	1	2	3	4	5
Investors feel secure in providing personal information.	.877	.042	.120	.022	.093
Risk associated with the transaction is low.	.846	.254	.037	.078	.019
Stock exchange will give investors individual	.021	.828	.161	.043	.195

attention.					
Stock exchange will have operation hours convenient to all their investors.	.039	.823	.294	.154	.076
Stock exchange will have brokers who give investor personal attention.	.143	.739	.291	.133	.028
Stock exchange will have investor's best interest at heart.	.040	.684	.186	.052	.309
Brokers on stock exchange will understand the specific needs of their investors.	.204	.552	.147	.284	.436
When the stock exchange promises to do something by a certain time it does so.	.026	.156	.845	.244	.173
When investors have a problem, stock exchange shows a sincere interest in solving it.	.092	.194	.785	.359	.022
The stock exchange performs the service right the first time.	.057	.097	.753	.093	.404
The stock exchange insists on error free records.	.039	.164	.519	.340	.281
Brokers tell you exactly when services will be performed.	.069	.100	.063	.828	.075
Brokers give you prompt services.	.148	.261	.364	.698	.028
Brokers are always willing to help you.	.025	.242	.155	.685	.292
Brokers are never too busy to respond to your request.	.006	.436	.405	.535	.204
The behavior of brokers in stock exchange will instill confidence in investors.	.089	.191	.248	.149	.816
Investors of stock exchange will feel safe in their transactions.	.344	.137	.215	.073	.772
Brokers on stock exchange will be consistently courteous with investors.	.096	.214	.139	.556	.558
Brokers on stock exchange will have knowledge to answer investor's questions.	.268	.356	.168	.216	.540
Source: Primary Data					
Extraction Method: Principal Component Analysis.					
Rotation Method: Varimax with Kaiser Normalization.					

In the further analysis an attempt has been made to explain those five factors which have been emerged as significant contributors in our study.

Factor 1 Security: Security is the 1st main factor under this study. It includes only two variables with significant factor loading. Security includes minimizing the risk and doubts of the investors. It includes financial security and confidentiality while doing online trading. Investors do not feel safe while trading online because of various online threats they face. So to encourage the

investors to invest more and more sufficient security regarding their money should be provided. Regulatory authorities such as SEBI have become stricter for providing better services to the investors. It is found in the study that only two variables are loaded under this factor but their factor loading is very much high. 1st variable is security regarding personal information with factor loading .877. It means whether the investors feel safe while providing their personal information to the employees of stock exchange or they hesitate and feel insecure. 2nd variable under this factor is various risks that are associated with transactions with factor loading of .846. Various risks related to transactions should be low because every investor invests in stock market for maximizing the returns and minimizing the risks.

Factor 2 Empathy: One of the major service quality dimensions which effect the investors satisfaction about online trading in Indian Stock Market is empathy which is emerged as a key factor under this study. Empathy includes easy access to investors, proper communication process and better understanding with investors¹³. Ease of access means ease of contact with investors so that investor feels convenient while doing online trading. Investors do not have to wait much for receiving various services. For increasing the satisfaction of investor towards online share trading there should be proper communication channel means investors can easily understand the process of trading and the needs of the investors can be easily identified by providing them individual attention. It is analyzed in the study that under the factor of empathy five major variables has been loaded. Giving investors individual attention is the key variable with highest factor loading of .828, which means the need of every investor is different so they should be individually attended in different ways to enhance their satisfaction level. Convenient operating hours is the next variable with factor loading of .823, providing any time trading without going to the offices of brokers. Next variables under this factor are related to the services given by the brokers of the stock market such as personal attention (factor loading .739), investors best interest at heart (factor loading .684) and brokers understand the specific need of investors with factor loading of .552. It is analyzed that by increasing the satisfaction level related to all these variables, the interest of the investors will definitely increase towards online trading.

Factor 3 Reliability: Reliability is emerged as the 3rd key factor under this study. Reliability means authenticity related to various services provided by the stock

exchange, which includes accuracy in billing and keeping all the record correctly. It also includes performing the services at right time. Most of the investors are totally dependable on brokers on stock exchange for better returns, so it is the responsibility of brokers to provide them better and error free services. It is analyzed in the study that the variable of keeping the promise is emerged as a key variable under this factor with highest factor loading of .845, which means brokers on the stock exchange provides the same services as they promise to provide and at right time. Next variable under this factor is showing a sincere interest towards solving the problems of investors with factor loading .785. It means brokers on stock exchange knows the various problems that investors face while investing online and solve them with full sincerity. Next variable is performing the services at right time with factor loading .753 and the last variable under this factor is error free records with factor loading of .519, which means due importance will be given towards transparency of transactions so that investor will invest in stock market without the fear of being cheated.

Factor 4 Responsiveness: Responsiveness is the 4th main factor which is emerged under this study. Responsiveness means helping the investors willfully and providing them prompt services so that they can invest without any hassles. Because satisfaction of investors is very important to attract other potential investors and as a result stock market will become more efficient and the possibility of market expansion will be feasible. It is analyzed in the Table No. 7.1.6 that four variables are highly loaded under this factor of responsiveness. 1st variable is telling exactly about the performance of services with highest factor loading of .828. 2nd variable is giving prompt services by the brokers on stock exchange with factor loading of .698. Other two variables under this factor are willingness to help the investor with factor loading of .685 and responding timely to the investor's request with factor loading of .535. All of the four variables under this factor have a factor loading greater than .50 which indicates the significance of these variables on the respective factor.

Factor 5 Assurance: Assurance is the 5th main factor that effects the online share trading. Assurance means brokers competence, courtesy and credibility towards investors. Competence means that brokers have sufficient skills and knowledge to perform various services¹⁴ and satisfy the investors. Courtesy means how polite, respect and friendly nature the broker have towards the investors¹⁵. It includes clean and neat appearance of public contact personnel.

Last one is credibility which means trustworthiness of brokers¹⁶. Investors totally depend on the advice of brokers so the credibility of brokers is important. With the help of assurance factor brokers inspire trust and confidence among investors and encourage them for online security trading. It is analyzed in the study that four variables are loaded under this factor with high factor loadings, i.e. all the variables have factor loading greater than .50. 1st variable under this factor is instilling confidence of investors in brokers with factor loading .816. It means investors have trust on the advice of brokers about online security trading. 2nd variable is feeling safe while doing the transactions with factor loading .772. Other two variables under the factor of assurance are courteousness of brokers towards investors (factor loading .558) and sufficient skill and knowledge of brokers (factor loading .540). It means brokers have the particular skill and knowledge so that they can solve the problems of investors, which investors face while doing online share trading.

DESCRIPTIVE STATISTICS

In this part of the study the impact level of various variables on the investment decisions are identified by showing the value of sample Mean and standard deviation of each variable. Following rules are applied to know the impact level of various variables.

- Means values which are less than 1.5 shows that the variables have very low impacts.
- Means values which are from 1.5 to 2.5 shows that the variables have low impacts.
- Means values which are from 2.5 to 3.5 shows that the variables have moderate impacts.
- Means values which are from 3.5 to 4.5 shows that the variables have high impacts.
- Means values which are more than 4.5 shows that the variables have very high impacts.

Table 6: Descriptive Statistics

S. No.	Variables	Mean	Standard Deviation
1.	Investors feel secure in providing personal information.	3.66	1.016
2.	Risk associated with the transaction is low.	3.48	1.072
3.	Stock exchange will give investors individual attention.	3.53	1.001
4.	Stock exchange will have operation hours convenient to all their investors.	3.64	.943
5.	Stock exchange will have brokers who give investor personal attention.	3.65	.771
6.	Stock exchange will have investor's best interest at heart.	3.84	.741
7.	Brokers on stock exchange will understand the specific needs of their investors.	3.51	.975
8.	When the stock exchange promises to do something by a certain time it does so.	3.46	.974
9.	When investors have a problem, stock exchange shows a sincere interest in solving it.	3.64	.859
10.	The stock exchange performs the service right the first time.	3.54	.965
11.	The stock exchange insists on error free records.	3.81	.747
12.	Brokers tell you exactly when services will be performed.	3.74	.751
13.	Brokers give you prompt services.	3.79	.748
14.	Brokers are always willing to help you.	4.01	.880
15.	Brokers are never too busy to respond to your request.	3.60	.951
16.	The behavior of brokers in stock exchange will instill confidence in investors.	3.84	.910
17.	Investors of stock exchange will feel safe in their transactions.	3.48	1.068
18.	Brokers on stock exchange will be consistently courteous with investors.	3.50	1.011
19.	Brokers on stock exchange will have knowledge to answer investor's questions.	3.57	1.015

Source: Primary Probe

Present analysis has been designed to study the emerging factors which effect the investor's satisfaction towards online share trading in the Indian Stock Market. The descriptive statistics of the different variables has been presented in Table 6. In the first factor that is Security, the variable of security related to providing personal information has the highest impact with the Mean value of 3.66 and standard deviation of 1.016. This mean value lies between 3.5 and 4.5 class intervals showing the high impact of this variable. The other variable i.e. risks associated with the transactions has the mean value of 3.48 and standard deviation of 1.072. The mean value of this variable lies in the lower level of class interval showing moderate impact of this variable but the standard deviation of both of these variables are fairly high in comparison to their Mean values which suggests that there are differences among the assessments of investors about the impact of these variables on their satisfaction level and the highest assessment of investors can be shifted to the next level of mean value and presents a higher impact than previous impact. In factor 2 i.e. Empathy, the variable of investors

best interest at heart have the highest impact with the Mean value of 3.84 and standard deviation of .741, which means most of the investor thinks that stock exchange is concerned about them and wants to help them. All the other variables such as giving individual attention to investors, convenient operation hours, brokers giving personal attention to the investors and understanding the specific needs of the investors have the Mean values of 3.53, 3.64, 3.65 and 3.51 respectively. All of the variables have Mean values between 3.5 and 4.5 which show the high impact. In the third factor i.e. Reliability only one variable related to promises made by stock exchange to do something by a certain time (Mean value of 3.46) shows the moderate impact on investor's satisfaction towards online share trading. All the other variables that are solving the problems of investors with sincerity (Mean value 3.64), performing the services at time (Mean value 3.54), and preparing error free records (Mean value 3.81) shows the high impact on satisfaction level as the mean value of all of these variables lie between 3.5 and 4.5. In the 4th factor named Responsiveness, the variable related to willingness to help the investors have the highest Mean value of 4.01 which shows high impact, other one is timing of performing various services by the brokers with Mean value 3.74. Next variable under this factor is giving prompt services with mean value 3.79 and the last variable is broker's response to the investor's request having 3.60 mean values. All the variables under this factor show high impact because the entire mean values lie between 3.5 and 4.5 impact level. Next factor of Assurance includes four variables. Mean value of first variable i.e. Behavior of brokers to inspire confidence in investors is 3.84 which shows the high impact. The standard deviation of this variable is .910. Next variable under this factor is investors feel safe in their transactions with mean value of 3.48 and standard deviation of 1.068. This factor shows the moderate impact but because of high standard deviation as compare to mean value it can be transferred to the next impact level. Another variable is courteousness of brokers with investors (Mean value 3.50 and Standard deviation 1.011). The last variable is broker's knowledge to answer the investor's questions (Mean value 3.57 and Standard deviation 1.015).

CONCLUSION

From the above study it is concluded that the overall impact of all the variables on satisfaction level of individual investor towards online share trading is high.

Few variables which are showing moderate impact can be transferred to the next impact level because of high standard deviation values.

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