Determinants Of Attitude Of Online Brokers Towards Online Trading In Pakistan Stock Exchange: Adopting Technology Acceptance Model

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Abstract

This study explores the attitude of brokers towards the use of online stock trading system in Pakistan stock exchange. In Pakistan the online stock trading system has been introduced since 2016, and still there are many brokers who are not using the online stock trading system in Pakistan stock exchange. To observed and understand the behavior of the brokers Technology Acceptance Model TAM theory has been used as mediator "perceived usefulness and perceived ease of use", and this article based on the attitude of the brokers above financial capability and Computer selfefficacy as external variables. The data for this research has been collected from the online brokers and the list of brokers is available on the website (PSX, 2016). For the data collection questionnaire survey method has been used and analyzed by using SPSS. The result showed that the financial capability and computer self-efficacy effect the broker's attitude towards online stock trading in Pakistan stock exchange. Whereas the mediators perceived ease of use and perceived usefulness has positive impact on the attitude of brokers.

Introduction

With the technology revolution and the vast development of technology and internet ins and outs, there is a massive insurgency in the stock exchange process. With the technological development, there is a change in the business culture; especially in the transaction sector heading in financial sectors and investment industries. The technologically integrated setup has changed the pace of transactions in the stock exchange market. In this regard, the technologically integrated online trading system has gained more popularity but still at its infancy stage in Pakistan (PSX, 2016). Getting interacted with a stockbroker or making a telephonic interaction is just getting an old idea with many flaws at the back-end Yang, (2019). To step up with the upgraded version of financial transaction culture around the world, online trading is the newest and most recommended solution with its vast internet facilities (Engvall, 2017). The online trading system has enabled the investors to directly connect with the chosen brokers and get their service done (Singh 2010).

The benefits of online trading have made every bit of transaction and transferring so easy and accessible that globally financial transactions are being relied on technological paths (Tsai, 2017). However, with this advantage lies some exceptional cases of flaws that cause an impatient state (Laily, 2016) and interrupt the transaction or transferring procedure (Herawati et al., 2018). In such conditions, these advancements and easiness do not create any positive impact as the customer satisfaction levels are not meet due to system errors and interruptions (Purniawati&Lutfi, 2017). The financial system needs to be upgraded, only then online financial traders will be influenced and there will loyal customers based on their satisfactory and trustworthy behaviors. Due to the infancy stage of the online stock exchange, the attitude of brokers keeps fluctuating and is influenced by the financial status of the company Aboelmaged et al., (2013). And when comes to online trading, not every process is smoothly managed, nor the system seems to be user-friendly (Yang, 2019). In the digital world, everything needs to be and should be transparent when it comes to the matter of financial investment matters (Gurun, 2018). Because, whenever there is finance involved, the financer expects transparency Abroud et al., (2015). In online stock trading, there is more of a relationship of trust in the online financial transactional matters Bailey, (2012). The broker's attitude towards online trading is more controlled by the transparency, quick access to details, and error-free system of reporting and serving Bollen et al., (2015).

The usual behavior of an online stock exchange broker is more comprised of investigating the previous records of only stock trading and financial transactions Carlin et al., (2017). On basis of previous records, the broker makes predictions of their today's digitized success in the financial market and decides for his financial investment (Engvall, 2017). The research conducted by Singh (2010), has studied the financial world and technology association and has estimated that in the past two decades, the technology adoption to the financial business and non-financial business has been supported and has improved. The study of Shi-Ming et al, (2005) has evidenced the modernized financial market and economic growth of the business sector is all based on the

involvement of technology, the financial transaction culture is more paced on the digitized transactional system. The study conducted by Waleed et al., (2010) has viewed that online networks are getting improved day by day and are getting more integrated into financial trading and online stock exchange business.

For the financial capability of the brokers, the initial factors that matter was always their interest in the stock market, the cultural independence, their social capitals, and income level, and further the financial regulatory information, their interest in financial knowledge, their literacy, self-efficacy and their experience in stock exchange markets (Sivaramakrishnan et al., (2017). Financers invest in markets when they have enough monetary value left in savings and they invest to get a better return for their retirement ages (Li, 2014). The financial capability for beginner investors is uncertain as they have never invested before so their investing behavior cannot be predicted to be strong enough (Adam and Shauki, 2014). Monetary values and savings of investors also impact their decision of investing and their financial capability of investing in stocks. The financial capability of an investor is majorly impacted due to his financial status; the stronger the financial resources one has the stronger will be the capability to invest (Tang, 2016).

In a study conducted by Bailey, (2012) the brokers will choose online trading as they have many advantages to them; low expenses for making a transaction, more quick access to monetary transactions, and a detailed financer satisfying information. These advantages urge the demand and implementation of integrated technology-based networks in the stock exchange (Shaikh and Karjaluoto 2015), with transforming the manual exchange into an electronic business exchange adopted system (Szopi nski, 2016) with the adoption of online portals of the financial company for making deals and transactions (Aboelmaged and Gebba, 2013).

The online stock market is only progressing due to online customers and brokers; their adoption of technological platforms for stock trading has enhanced the e-trading service (Engvall, 2017). This study has investigated the behavioral patterns that are influencing the broker's attitude towards online stock trading. With the integration of the theoretical model of TAM theory, this study has explored the technology accepting the behavior of online purchasers associated with every kind of business. The financer's capability towards understanding the online culture of purchasing and selling of stocks as well as his confidence in the credibility of the digitized medium of trading is a new concept in Pakistan's stock exchange (PSX, 2016; 2017). As there is more involved in financial trading and technological integration is also new for the brokers, they may hesitate to trust the online network of trading (Tang, 2016; Gurun, 2018). The brokers need some time to get more familiar with the technology and the newly introduced digital applications and the same is the situation for the brokers in Pakistan Stock Exchange (PSX, 2017). The shift from manual transactions to online transactions is creating difficulties, as not every financer has sufficient knowledge about the technology nor every customer is highly computer literate Finke, (2013).

With the above-given context, online trading in Pakistan is getting highly complex, the digestion of this transformed system from manual to online is demanding more efficiency and computer literacy of the user's Chan et al., (2016). The more advanced technology is becoming the more efficiency is demanded from the customer Laily, (2016). This research is also going to explore the estimated impact created by the user's level of self-efficacy and their command of using computers Herawati et al., (2018). While using a computer the user must have sufficient knowledge regarding its operations, functioning, and instructions that are required for using any application (Liu et al., 2011).

Online stock trading was introduced in Pakistan in 2016, the educated community both in finance and computer had easily adopted this new integration and development of the digitized network. But the majority of the user community is not much computer literate, and they hesitate to learn this new technology-based setup and so, their acceptance towards online systems dominates (PSX, 2017). It also influences the attitude of brokers towards technology and so this study highlights the link of online stock trading is dependent upon the computer literacy level and financial capability of brokers in the Pakistan Stock Exchange PSX., (2016, 2017).

The online stock trading system was established on 11 January, 2016 for the first time in the Pakistan stock exchange PSX, (2016, 2017), and on 2018, 23 February there 599 companies were listed and the total market capitalization was \$84 billion. There were 833 domestic institutional investors 1886 are foreign investors and listed merchandising investors were almost 0.22 million. There were total numbers of asset management firms/companies 21 and 400 brokerage houses were members of Pakistan stock exchange. The purpose of this study to explore the determinants of the attitude of brokers in online stock trading in the Pakistan stock exchange with TAM theory.

There are some issues related to broker's attitude towards online stock trading that is not positive. This study has been conducting on a small scale for solving this issue for understanding the problem of brokers towards using online systems in the Pakistan stock exchange.

2. LITERATURE REVIEW

In this study, TAM theory has been used with new external variables Computer self-efficacy, and Financial Capability. TAM theory has been introduced by Device very first time by Davis, (1989). In this article, there is two mediators' perceived ease of use and perceived usefulness. PU describes the usefulness of the technology, and PEOU describes the individual mental power towards using the technology Gurun et al., (2018). FC shows

the wealth capability of brokers towards using the online stock trading system, and CSE describes the broker's ability to use a computer instead of a manual system in stock exchange Yeo and Fisher, (2017).

2.1 Attitude: Attitude is a behavior of an individual towards using something, attitude can be positive or negative Engvall, (2017) and same as the broker's attitude towards using the online stock trading is somehow positive or negative in Pakistan stock exchange. In Pakistan it has been introduced in 2016 PSX, (2016, 2017), before it there was not as much awareness of the online trading system PSX. Attitude supports the behavior of buying or using technology Bailey, (2012). TAM theory supports the adopting the new technology as perceived ease of use and perceived usefulness Pratkanis et al., (2014), Laily, (2016). Perceived usefulness enhances the importance of using new technology Bailey, (2012). Whereas Perceived Ease of Use describes the usage of new technology Terzis and Economides (2011). This theory shows that attitude has a positive effect on the attitude of brokers towards using the online stock trading system in PSX, (2016, 2017).

The financial capability of brokers also affects the attitude of brokers towards using the online stock trading system Van et al., (2011). It is very important for the brokers of online stock trading that how to use or operate the computer Gupta and Arora, (2017) the variable computer self-efficacy support this attitude of brokers towards using the technology in Pakistan stock exchange.

2.2 PERCEIVED USEFULNESS: Perceived usefulness enhances the performance of the brokers towards using the new technology Yang, (2019), perceived usefulness has a direct relation with broker's attitude towards using the internet/Computer. Perceived usefulness describes the usefulness of the new technology Phan et al., (2019). TAM theory supports the acceptance of new technology, perceived usefulness, and perceived ease of use are the main factors Technology Acceptance Model. TAM with two other external variables compute self-efficacy and financial capability show the positive relationship between variables.

The financial capability of brokers towards using the online stick trading in stock exchange shows a positive relationship with TAM theory Purniawati et al., (2017). FC shows that how much brokers are financially capable of using the online stock trading system Ponchio et al., (2019). Computer Self-Efficacy shows the capacity of an individual or broker to use the computer instead of a manual system. CSE has a direct relation with TAM theory.

- **2.3 Perceived** Ease OfUse: Technology Acceptance Model is known as the TAM theory that has been presented by Davis in (1989), there are two main factors of TAM theory as PU (perceived usefulness) and PEOU (perceived ease of use) Taylor and Todd (1995). PEOU has been defined as the usage of the internet/Computer would be free of mental and physical efforts. Technology makes the work easier, and it saves time Tsai, (2017), Yang, (2019).Perceived ease of use shows the favorable attitude of individuals towards the technology Akturan and Tezcan, (2012). It also makes the favorable attitude for the brokers towards using the internet/computer in the Pakistan stock exchange. Moving from a manual to an online system may be quite tough but an online system has more benefits than a manual system, it saves time and easy to understand and operate.
- **2.4 FINANCIAL CAPABILITY:** The financial capability of brokers describes as the degree to which a broker believes that online stock trading would be costly to use Li, (2014). The financial capability of brokers is based on the investment decision Ponchio et al., (2019). There are three main domains of financial capability these are staying informed by the financial issues, money management, and making financial choices Akturan&Tezcan, (2012). Financial Capability has a positive effect on the broker's attitude. Financial capability increases the use of the internet and moderates the lifestyle of users (Gangl et al., 2015). The online stock trading system has become a great channel for consulting financial advisors by users Ponchio et al., (2019).

Financial literacy of stock trading increases the demand of brokers Tsai, (2017). Financial capability has a direct and positive relation with TAM towards using the online stock trading in stock exchange Purniawati et al., (2017). Financial capability is an important variable it includes two main components financial literacy and financial behavior Phan et al., (2019). This study is focused on TAM theory with computer self-efficacy and financial capability.

2.5 COMPUTER SELF-EFFICACY: Self-efficacy has been defined as the "generative capability in which behavioral, intellectual and social sub-skills must be organized Bandura, (1982), for innumerable actions to serve Szopi'nski, (2016). Computer Self-Efficacy describes the degree to which an individual has the skill to use a computer. Computer self-efficacy enhance the skills of brokers to use and operate computer towards online stock trading. However, in Pakistan online stock system was introduced in 2016 in the Pakistan stock exchange, there is the adoption of an online stock trading system is increasing day by day (Gangl et al., 2015).

Computer self-efficacy has positively influenced by the TAM theory, and also with FC. It has been also observed that the diversity of trading systems from manual to online is quite tough for the users who were not familiar with the use of computers Liébana et al., (2017). In the questionnaire there are two main factors are using in the computer self-efficacy scale "Beginning level Computer skill" and "advance level Computer skill Adams et al., (1992), Agarwal et al., (1998), Abroud et al., (2015). The adoption of new technology in the stock exchange is a continuous growth in stock trading. Due to lack of knowledge, many brokers resist using the computer Bagozzi et al., (2010).

3. RESEARCH METHODOLOGY

The research is based on the pragmatist approach in which the quantitative technique of survey questions is used to conduct and evaluate the research (Saunders et al, 2009). This research is based on determining the attitude towards online stock trading in the Pakistan stock exchange. From the developed theory of TAM, the hypothesis regarding brokers' attitude, computer self-efficacy, and the TAM influence on online stock trading were developed. Further research is structured to estimate the result of the hypothesis. The target population for this study is the online brokers in PSX. On the website of the Pakistan stock exchange, the list of the online investing firm is available, and there are total 233 companies which are using a stock trading system.

According to Bentler and Chou (1987) i.e. $57 \times 7 = 399$ it is the sample size. The company trading community was approached through their emails. Questionnaires were sent to them through emails and responses were collected back. According to the provided list, 205 companies responded and filled the questionnaire. The data has been collected through convenient sampling from a defined population. This technique is easy for the selection of the respondents. This technique provides ease for the respondents as their acceptance to answer the questions and availability are necessary for the data collection process. The target population of this research is active brokers of the Pakistan stock exchange. The methodology that has been used for the collection of data by the previous source of questionnaire/survey. The detail of adoption is as follows with variables operationalization: by the study of (Gangl et al., 2015), there are 5 items are adopted for measuring the attitude.

For measuring the variable perceived usefulness there were 5 items adopted from the study of Hair et al. (2006). For measuring perceived ease of use there were 4 items adopted from the study of Cheng (2006). For measuring the variable Financial Capability there were 16 items selected from the study of (Gangl et al., 2015) and for measuring the variable Computer self-efficacy there were 28 items adopted from the study of Murphy (1989). In this research latest version of SPSS and AMOS has been used, the initial procedure of statistical test that has been used to check the model fitness such as (SEM, Reliability, Normality, and Validity), and for analyzing the relationship and impact of variables with each other descriptive and correlation analysis has been used.

4. ANALYSIS AND FINDINGS

This study has been conducted based on a questionnaire survey. Through the questionnaire survey, many different kinds of questions were asked to the respondents. In the category of respondents, there are male and female, female respondents are less than male respondents with the percentage of 33 and 67.

Table 4.1 Demographic distribution of respondents

	Male	138	67%
Gender	Female	67	33%
	Total	205	100%
Age			
	21-30	19	9%
	31-40	137	67%
	41-50	49	24%
	41-50	205	100%
		107	52.2%
T	Bachelors Masters M.Phil.	66	32.2%
Education		32	15.6%
		205	100%
		103	50.3%
T 1 0	Full time	73	35.6%
Job Status	Part time	29	14.1%
	No job	205	100%
Do you prefer	W	140	
online stock	Yes	149	72.7%
trading?	No	56	27.3%

The next category of demographic is age which is an important factor that had (21 to 30, 31 to 40, 41 to 50) four options, the higher category of respondents of (31 to 40) age group. The other category is based on the educational level which is categorized as Bachelors, Masters, and M.Phil, and the most respondents are Bachelors students, and that was 52 percent. In the section of personal information, the important question was the job status, and it is categorized as full-time, part-time, and No job. And most respondents were full-time job status these are the experience brokers of online stock trading. Another section of information is (do you prefer online stock trading?) and most respondents prefer online stock trading with a percentage of (72.7).

4.1 INITIAL DIAGNOSTIC ANALYSIS: The data was collected from the 233 online brokers through the questionnaire survey, but many questionnaires were received inappropriately such as missing questions. Another problem that had been faced during data entry, such as 33 was entered instead of 3, and that created lots of problems in the structural equation modeling finding values on SPSS. After screening the questionnaire of 233 questions, removing outliers, data correction and missing values questionnaire of 205 questions had been successfully run on the SPSS.

.2 NORMALITY ANALYSIS: The normal value of Skewness and Kurtosis is "0" and the acceptable value is under (+1,-1). The Skewness and Kurtosis overall showed statistics data normality and fitness. The Skewness and Kurtosis acceptable value must be under the (+1,-1).

Here the statistic value Skewness of AT, PU, PEOU, FC and CSE are (.578, .194, .025, -.060, 0.78) and Kurtosis statistic value of AT, PU, PEOU, FC, CSE are (.111, -176, -420, -779 and -414). In this table, all the values were below 1 show the normality of data. According to past research, the values of Skewness and Kurtosis below 1 explained the normality of data Tabachnick, et al., (2007).

The mean value is the sum of data. The standard deviation is the summary measure from the mean differences of each observation. The variation and dispersion of the number of sets of values are called standard deviations. The correlation showed the relationship between two or more variables. The standard value of correlation is between (0-1). The values between (0-1) show the strength of the relationship between two or more variables. In the direct correlation between two variables than the variation increases in one variable and decrease in another variable. The correlation of positive and negative signs shows the direction of the data Hair et al., (2019).

Table 4.3 Means, Standard deviation, Correlation

Table: Normality Test (Skewness and Kurtosis)

	Skewness		Kurtosis			
	Statistics	Std. Error	Statistics	Std. Error		
AT	.678	.141	.191	.281		
PU	.294	.141	166	.281		
PEOU	.025	.141	520	.281		
FC	060	.141	579	.281		
CSE	.088	.141	314	.281		

4.3: FACTOR LOADING AND VARIANCE: In the (SEM) Structural equation modeling described two types of errors, one has a separate error in the measurement in the equation, and the other can correlated with the term error. According to Hair et al. (2006), all the factors must be greater than 0.57. All the values of factor loading must be more than 0.55 are accurately considered according to the general rule of thumb Tabachnick and Fidell, (2007). The results shows that the value lies between (AT 0.577 – 0.715, PU values 0.589 –0.723, PEOU values 0.534 –0.698, FC values 0.528 –0.693 and the CSE values 0.523 –0.723). the values which are lower than 0.04 are deleted according to the criteria of the factor loading, all the values which are (λ < 0.5) greater than 0.05 are loaded in factor Adams et al., (1992), Hair et al., (2006).

Table 4.4 Factor loading

		AT	PU	PEU	FC	CSE								
Variance percentage		10.1	12.3	15.2	13.3	8.7								
Comm.		10.1	22.4	37.7	51	59.7								
AT	AT1	.653					FC	FC1	.637	CSE	CSEB1	.654	CSEA1	609
	AT2	.577						FC2	.577		CSEB2	.657	CSEA2	.555
	AT3	.579						FC3	.639		CSEB3	.641	CSEA3	.684
	AT4	.620						FC5	.693		CSEB4	.590	CSEA4	.529
	AT5	.715						FC6	.689		CSEB6	.653	CSEA5	.691
PU	PU1		.589					FC7	.528		CSEB7	.622	CSEA6	.573
	PU2		.635					FC8	.646		CSEB8	.645	CSEA7	.644
	PU3		.723					FC9	.668		CSEB9	.612	CSEA8	.596
	PU4		.598					FC10	.678		CSEB10	.543	CSEA9	.535
	PU5		.686					FC12	.689		CSEB11	.568	CSEA10	.653
PEU	PEU1			.534				FC13	.509		CSEB13	.651	CSEA11	.723
	PEU2			.553				FC14	.598		CSEB14	.643	CSEA12	.549
	PEU3			.634				FC15	.643		CSEB15	.673		
	PEU4			.698				FC16	.687		CSEB16	.598		

4.4 CRONBACH ALPHA (CA), COMPOSITE RELIABILITY (CR) AND AVERAGE VARIANCE EXPLAINED (AVE).

The reliability of data is the most important process, Cronbach's alpha (α) has been used to check the reliability of the data. According to Hair et al. (2006), the standard criteria of (α) must be lie between (0.81-0.95), and the results shows that all the values 0.7 according to the criteria. Another test of reliability is composite reliability and the standard value of (CR) is 0.7, and the results show all values are greater than 0.7 according to the criteria that support the reliability of data Adams et al., (1992). Average variance explained (AVE) must be greater than 0.5, (AVE) 0.5 shows that the results of convergent validity are perfect for the data Agarwal et al., (1998).

Table 4.5 Cronbach alpha (CA), Composite reliability (CR) and average Variance explained (AVE).

Indicates	Final measurement model			
X²(df)	993.879			
CMIN/df	1.27			
CFI	0.93			
RMSEA(P-close)	0.05(.505)			
SRMR	0.04			

4.5 MODEL FITNESS: The Chi-Square value, evaluating overall model fitness by the traditional measurement, shows inconsistency between sample and co-variance matrices. The Chi-Square value is 993.879 with CMIN/DF 1.27 (Hair, 2006). The CFI Comparative Fit Index value is 0.95 and it is highly excellent model fitness according to the standard value that must be greater than 0.90 (Hair et al 2006). The other test that has been measure is "Root Mean Square Error" according to the criteria it must be less than 0.07 and it is (RMSEA=0.05) in the table, which is favorable for the model. The favorable Residual value for a running model is less than 0.08 (Hair, 2006), and according to past research, the perfect value of "Standardized Root Mean square" is (SRMR=0.05/0.505) Kline, (2005).

The next step path analysis was performed using AMOS-20, the results of path analysis are presented in Table 4.7. The results showed H1 was accepted with a path coefficient of 0.425 and a p-value of 0.000, the analysis also revealed that the H1a mediation path was also accepted with a path coefficient of 0.645 and a p-value of 0.003. H1b second mediation path was not supported with path coefficient 0.105 and p-value 0.061. The path H2 was also not supported with a path coefficient of 0.053 and a p-value of 0.073. H2a and H2b both mediation paths were supported with path coefficients 0.455 and 0.645, and p-value of 0.004 and 0.000 respectively. Path H3 was supported with path coefficient 0.451, also H4 was supported with path coefficient 0.433 and p-value of 0.036.

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Table 4.6 Model fitness

Нуро	Path	Modified Model				
300 7.7 .00		Path	T value	Results	Discussion	
		Co-eff				
H1	FCAT	0.425	2.98	S	H1 and H1a	
H1a	FCPUAT	0.645	3.11	S	both supported	
H1b	FCPEOUAT	0.105	1.54	N.S	Partial mediation	
H2	CSFAT	0.053	1.83	N.S	No mediation	
H2a	CSFPEOU AT	0.455	2.99	S		
H2b	CSEPUAT	0.645	3.11	S	Full mediation	
H3	PUAT	0.451	3.01	S	Full mediation	
H4	PEOUAT	0.433	3.58	S		

Table 4.7 Summary of model

The findings of this analysis suggest financial capability has a significant impact on Attitude towards online trading, it was also concluded that perceived usefulness mediates the relation between financial capability and attitude. However, in the case of perceived ease of use the mediation path is not supported, reflected that perceived ease of use does not play a mediational role among these two variables. Computer self-efficacy though does not have a direct relation with attitude towards online trading, but both mediational paths were supported with perceived usefulness and perceived ease of use. Moreover, both mediators perceived usefulness and perceived ease of use have a direct relationship with the dependent variable, attitude towards online trading. The results are also presented diagrammatically in Figure 4.1. That shows hypothesized paths along with their path-coefficient. The dotted line presents an insignificant path, whereas the black line describes the significant path of the conceptual model.

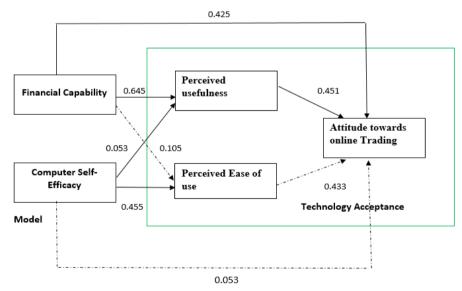


Figure 1: Conceptual Framework

5. Discussion and Conclusion

The results show that H1 and H1a are the supported variables it is significant and had direct relation FC with AT, FC with Mediator PU, and Mediator AT. The hypothesis H1b had a partial mediation, and it is not significant. Hypothesis H2b and H3 show significant values and full mediation.

Many factors affect the broker's attitude towards the online system, but in this study, the TAM theory has been explored with FC and CSE these all variables are chosen for some reasons because these support attitude of

brokers. This study will be helpful for those who are not using the online system instead of manual system, the use of technology makes their work easier it saves their time it secures their data it gives them all information in one click, it enhances their performance level, it just requires learning that how to use the technology.

This study explored the attitude of brokers towards online sock trading in the Pakistan stock exchange and that has been not studied before with these external variables. The technology acceptance model played an important role and its factors perceived ease of use and perceived usefulness have a positive effect on the attitude of brokers towards online stock trading. The external variables, Computer self-efficacy, and financial capability has been used, the study indicating that the financial capability of brokers is more important than the financial literacy, Computer self-efficacy boost up the confidence of brokers to use the technology. This study has been suggested that the Pakistan stock exchange must have to introduce and develop such types of training programs for investors and brokers to learn how to use and operate computers and technologies.

6. Recommendations

Due to the lack of knowledge, several brokers are not using the online stock trading system and still, they are using the manual system. It is the responsibility of the firms to educate them through the training sessions and different workshops that how to use the technology and also about the benefits of the technology. The online stock trading system is easier and more beneficial as compared to the manual system Hair et al., (2016). The main reason for not acceptance of the technology is unawareness that how to use the technology and how to operate the computer and they feel ashamed to use the online stock trading system, for them it is necessary to give them an awareness of technology.

In this study, the TAM theory has been used but this study can be observed some other theories such as TBP. Many variables must be studied with online stock trading such as financial risk, financial literacy financial education, and financial behavior, to understand the attitude of brokers towards technology for future research behavioral intention is an important variable that must be studied.

References

- Abele, A. E. and Spurk, D. (2009). "The longitudinal impact of self-efficacy and career goals on objective and subjective career success". Journal of Vocational Behavior, Vol. 74 No.1, pp.53-62.
- Aboelmaged, M.G.; Gebba, T.R. Mobile Banking Adoption: An Examination of Technology Acceptance Model and Theory of Planned Behavior. Int. J. Bus. Res. Dev. **2013**, 2, 35–50.
- Abroud, A., Choong, Y. V., &Muthaiyah, S. (2010). Preparation of measurement tools of the effective factors for the acceptance of online stock trading. Eur. J. Econ. Finance Adm. Sci, 34-51.
- Abroud, A., Choong, Y. V., Muthaiyah, S., & Fie, D. Y. G. (2015). Adopting e finance: decomposing the technology acceptance model for investors. *Service Business*, 9(1), 161-182.
- Adam, A. A., and Shauki, E. R. (2014). Socially responsible investment in Malaysia: behavioural framework in evaluating investors' decision-making process. J. Clean. Product. 80, 224— 240. doi: 10.1016/j.jclepro.2014.05.075
- Adams, D. A., Nelson, R. R., & Todd, P. A. (1992). Perceived usefulness, ease of use, and usage of information technology: A replication. MIS Quarterly, 16(2), 227–247.
- Agarwal, R., Ahuja, M., Carter, P.E., and Gans, M. (1998), 'Early and Late Adopters of IT Innovations: Extension of Innovation Diffusion Theory', Working Paper, College of Business, Florida State University.
- Agarwal, R., Sambamurthy, V., & Stair, R. M. (2000). The evolving relationship between general and specific computer self-efficacy—An empirical assessment. *Information systems research*, 11(4), 418-430.
- Akturan, U.; Tezcan, N. Mobile Banking Adoption of the Youth Market. Mark.Intell. Plan. **2012**, 30, 444–459.
- Al-Ghaith, W., Sanzogni, L., & Sandhu, K. (2010). Factors influencing the adoption and usage of online services in Saudi Arabia. *The Electronic Journal of Information Systems in Developing Countries*, 40(1) 1-32
- Amiri, M., Zandieh, M., Vahdani, B., Soltani, R. and Roshanaei, V. (2010), "An integrated eigenvector—DEA-TOPSIS methodology for portfolio risk evaluation in the FOREX spot market", *Expert Systems with Applications*, Vol. 37 No.1, pp. 509-516.
- Bagozzi, R. P., Yi, Y., & Phillips, L. W. (1991). Assessing construct validity in organizational research. *Administrative science quarterly*, 421-458.
- Bamforth, J., Jebarajakirthy, C., and Geursen, G. (2018). Understanding undergraduates' money management behaviour: a study beyond financial literacy. Intern. J. Bank Mark. 36, 1285— 1310.doi: 10.1108/ijbm-05-2017-0104
- Bandura, A. (1982). Self-efficacy mechanism in human agency. American Psychologist, 37, 122-147.
- Bailey, W. (2012). "Behavioral finance and me, or how I came to see the light". The *European Journal of Finance* 1(1): 1-10

- Bilias, Y., Georgarakos, D. and Haliassos, M. (2010), "Portfolio inertia and stockmarket fluctuations", *Journal of Money, Credit and Banking*, Vol. 42 No. 4, pp. 715-742.
- Bollen, N. P. and Whaley, R. E. (2015), "Futures Market Volatility: What Has Changed? ", Journal of Futures Markets, Vol. 35 No. 5, pp. 426-454.
- Braynov, S. (2013), "What human trust is and is not: on the biology of human trust", 2013 AAAI Spring Symposium Series.
- Brogaard, J., Hendershott, T. and Riordan, R. (2014), "High-frequency trading and price discovery", *Review of Financial Studies*, Vol. 27 No. 8, pp. 2267-2306.
- Chan, S. F., Barnes, B. R., &Fukukawa, K. (2016). Consumer control, dependency and satisfaction with online service. *Asia Pacific Journal of Marketing and Logistics*, 28(4), 594-615.
- Carlin, B.; Olafsson, A.; Pagel, M. Technology Adoption across Generations: Financial Fitness in Information Age; Working Paper Series; National Bureau of Economic Research: Cambridge, UK, 2017.
- Cheng, T. E., Lam, D. Y., & Yeung, A. C. (2006). Adoption of internet banking: an empirical study in Hong Kong. *Decision support systems*, 42(3), 1558-1572.
- Chang, C. (2008). "The impact of Behavioural Pitfalls on Investors' decisions: The Disposition Effect in the Taiwanese Warrant Market". Social Behaviour and Personality 36(5): 617-634.
- Chang, Y.; Wong, S.F.; Lee, H.; Jeong, S.P. What Motivates Chinese Consumers to Adopt Fintech Services: A Regulatory Focus Theory. In Proceedings of the International Conference on Electronic Commerce: E-Commerce in Smart Connected World, Suwon, Korea, 17–19 August 2016.
- Cheng, Y. M. (2011). Antecedents and consequences of e-learning acceptance. *Information Systems Journal*, 21(3), 269-299.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS quarterly, 319-340.
- Davis, L. D., Bagozzi, R. P., &Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. Management Science, 35(8), 982–1003.
- Engvall, T. (2017), "Fear, Greed and lack of trust in online financial trade", Journal of Administrative Sciences and Technology, Vol. 2017
- Finke MS (2013) financial advice: Does it make a difference? In: Mitchell, Smetters (eds) The market for retirement financial advice. Oxford University Press, Oxford
- Forbes, J., & Kara, S. M. (2010). Confidence mediates how investment knowledge influences investing self-efficacy. Journal of economic psychology, 31(3), 435-443.
- Fernandes D, Lynch JG Jr, Netemeyer RG (2014) Financial literacy, financial education, and downstream financial behaviors. ManagSci 60(8):1861–1883.
- Gangl, K., Kirchler, E., Lorenz, C., &Torgler, B. (2015). Wealthy tax non-filers in a developing country: Taxpayer knowledge, perceived corruption and service orientation in Pakistan. *Perceived Corruption and Service Orientation in Pakistan (August 13, 2015)*, 26, 1-26.
- Gupta, A.; Arora, N. Consumer Adoption of M-Banking: A Behavioral Reasoning Theory Perspective. Int. J.Bank Mark. **2017**, 35, 733–747.
- Gurun, U. G., Stoffman, N., & Yonker, S. E. (2018). Trust busting: The effect of fraud on investor behavior. Review of Financial Studies. 31(4), 1341-1376
- Hair, J., Black, W., Babin, B., Anderson, R., & Tatham, R. (2006). Multivariate data analysis (6th ed.).
 Uppersaddle River, N.J.: Pearson Prentice Hall. Hair, F. Jr., Black, W. C., Babin, B. J., and Anderson, R. E. (2010). Multivariate Data Analysis: A Global Perspective, 7th Edn. New York, NY: MacMillan.
- Hair, J. F. Jr., Hult, G. T. M., Ringle, C., and Sarstedt, M. (2016). A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM). Thousand Oaks, CA: Sage Publications.
- Hair, J. F., Risher, J. J., Sarstedt, M., &Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, 31(1), 2-24.
- Han, B. and Hirshleifer, D. (2013), "Self-enhancing transmission bias and active investing",
- Hastings JS, Madrian BC, Skimmyhorn WL (2013) Financial literacy, financial education, and economic outcomes. Annu Rev Econ 5:347–373.
- Heimer, R.Z. (2014), "Friends do let friends buy stocks actively", *Journal of Economic Behavior & Organization*, Vol. 107, Part B, pp. 527-540.
- Herawati, N. T., Candiasa, I. M., Yadnyana, I. K., &Suharsono, N. (2018). Factors That Influence Financial Behavior Among Accounting Students in Bali. International Journal of Business Administration . 9(3), 30-38
- Kastlunger, B., Lozza, E., Kirchler, E., &Schabmann, A. (2013). Powerful authorities and trusting citizens: The slippery slope framework and tax compliance in Italy. *Journal of Economic Psychology*, *34*, 36–45.

- Li, G. (2014). Information sharing and stock market participation: evidence from extended families. Rev. Econ. Statist. 96, 151–160. doi: 10.1162/rest_a_00301
- Laily, N. (2016). Pengaruh literasi keuangan ter hadap perilaku mahasiswa dalam mengelola keuangan. Journal of Accounting and Business Ed- ucation, 1(4), 1-17.
- Lin, C.P., Chen, S.C., Chiu, C.K., Lee, W.Y., 2011. Understanding purchase intention during product-harm crises: moderating effects of perceived corporate ability and corporate social responsibility. J. Bus. Ethics 102 (3), 455–471.
- Liébana-Cabanillas, F., Marinković, V., & Kalinić, Z. (2017). A SEM- neural network approach for predicting antecedents of m-commerce acceptance. International Journal of Information Management, 37(2), 14-24.
- Lee, H., &Lee, S. (2010). Internet versus mobile services: Comparisons of gender and ethnicity. *Journal of Research in Interactive Marketing*, 4(4), 346-375.
- Lin, W.-S. (2012). Perceived fit and satisfaction on web learning performance: IS continuance intention and task-technology fit perspectives, *International Journal of Human Computer Studies*, Available online 14 February 2012.
- Masteika, S. and Rutkauskas, A. V. (2012), "Research on futures trend trading strategy based on short term chart pattern", *Journal of Business Economics and Management*, Vol. 13 No. 5, pp. 915- 930.
- Murphy, C. A., Coover, D., & Owen, S. V. (1989). Development and validation of the computer self-efficacy scale. Educational and Psychological measurement, 49(4), 893-899
- Ng, A.W.; Kwok, B.K.B. Emergence of Fintech and Cybersecurity in a Global Financial Centre:Strategic Approach by a Regulator. J. Financ. Regul. Compliance **2017**, 25, 422–434.
- Park, C. K., H. J. Kim, and Y. S. Kim. 2014. "A Study of Factors Enhancing Smart Grid Consumer Engagement." Energy Policy 72: 211–218.
- Phan, T. C., Rieger, M. O., and Wang, M. (2019). Segmentation of financial clients by attitudes and behaviour: a comparison between Switzerland and Vietnam. Intern. J. Bank Mark. 37, 44–68. doi: 10.1108/ijbm-07-2017-0141
- Pompian, M.M. (2012). Behavioural Finance and Investor Types: Managing Behaviour to Make Better Investment Decisions, 2nd edition, Wiley Finance
- Ponchio, M. C., Cordeiro, R. A., and Gonçalves, V. N. (2019). Personal factors as antecedents of perceived financial well-being: evidence from Brazil. Intern. J. Bank Mark. 37, 1004–1024. doi: 10.1108/ijbm-03-2018-0077
- Purniawati, R. T., &Lutfi, L. (2017). Literasi keuangan dan pengelolaan keuangan keluarga dalam perspektifbudayaJawadanBugis. Journal of Business and Banking, 7(1), 31-46.
- Purnomo, S. H., & Lee, Y. H. (2013). E-learning adoption in the banking workplace in Indonesia: an empirical study. Information Development, 29(2), 138-153.
- Ramayah, T., Ahmad, N. H., & Hong, T. S. (2012). An assessment of e-training effectiveness in multinational companies in Malaysia. Journal of Educational Technology & Society, 137
- Ranganathan, T. and Ananthakumar, U. (2014), "Market efficiency in Indian soybean futures markets", *International Journal of Emerging Markets*, Vol. 9 No.4, pp. 520-534.
- Rogers, C. and Tennis, J. (2013), "Authenticity as a social contract—We are our records", Conference 2013 Proceedings, pp. 801-803, Ryu, H. What Makes Users Willing or Hesitant to Use Fintech? The Moderating Effect of User Type.Ind. Manag. Data Syst. **2018**, 118,541–569.
- Shaikh, A.A.; Karjaluoto, H. Mobile Banking Adoption: A Literature Review. Telemat. Inform. **2015**, 32, 129–142.
- Shi-Ming H, Yu-Chung H, David CY (2005) A study on decision factors in adopting an online stock trading system by brokers in Taiwan. Decis Support Syst 40(2):315–328
- Shah, A., Hashmi, S. H., & Chishti, A. F. (2016). Much Has Changed Since Baron and Kenny's (1986) Classic Paper: Let Us Learn What Kenny's (2012) Contemporary Mediation Analysis Prescribes. Jinnah Business Review, 1, 58-67.
- Siddik, M. N., Sun, G., & Kabiraj, S. (2015). Financial Inclusion and its Determinants: A Study of Bangladesh. Indian Journal of Finance, 9(6),7.
- Singh A (2010) Investors' adoption of internet stock trading: a Study. J Internet Bank Comm 15(1):14–19
- Singh, A., Sandhu, H. S., &Kundu, S. C. (2010). Investors' adoption of internet stock trading: A study. Journal of Internet Banking and Commerce, 15(1), 1-21.
- Sivaramakrishnan, S., Srivastava, M., and Rastogi, A. (2017). Attitudinal factors, financial literacy, and stock market participation. Intern. J. Bank Mark. 35, 818–841. doi: 10.1108/ijbm-01-2016-0012
- Szopi ´nski, T.S. Factors Affecting the Adoption of Online Banking in Poland. J. Bus. Res. **2016**, 69, 4763–4768.

- Tabachnick, B. G., Fidell, L. S., & Ullman, J. B. (2007). Using multivariate statistics. New York: Harper Collins.
- Tang, T. L.-P. (2016). Theory of monetary intelligence: money attitudes—religious values, making money, making ethical decisions, and making the grade. J. Bus. Ethics 133, 583–603. doi: 10.1007/s10551-014-2411-5
- Terzis, V., and A. A. Economides. 2011. "The Acceptance and Use of Computer Based Assessment." Computers & Education 56 (4): 1032–1044.
- Tsai, S. pei. (2017). E-loyalty driven by website qual- ity: The case of destination marketing organization websites. Journal of Organizational Computing and Electronic Commerce, 27(3), 262–279.
- Van Rooij, M., Lusardi, A., & Alessie, R. (2011). Financial literacy and stock market participation. *Journal of Financial Economics*, 101(2), 449-472.
- Waleed A-G, Sanzogni L, Sandhu K (2010) Factors influencing the adoption and usage of online service in Saudi Arabia. Electron J InfSyst Develop Countries (EJISDC) 40(1):1–32
- Xia T., Wang Z, and Li K. (2014), Financial Literacy Overconfidence and Stock Market Participation, Soc Indic Res (2014) 119:1233–1245
- Yang, A. S. (2019). Investors' trust and financial par- ticipation: Latent difficulty measurement. Asia Pacific Management Review, 25(2), 87-98.
- Yeo.J.H, Fisher.P.J.(2017). Mobile Financial Technology and consumer's financial capability in the united scale. Journal of education & social policy 7(1), 80-93

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