

Impact of psychology on behavioral intention in investing in capital markets: A survey of Colombo Stock Exchange

Dayaratne D.A.I and Wijethunga A.W.G.C.N

Department of Accountancy & Finance, Faculty of Management Studies, Sabaragamuwa University of Sri Lanka

Abstract

There are sizable evidences that the contemporary finance is moving towards the behavioral theories which attempts to explain the investor behavior. Theory of Planned Behavior (TPB) of is an excessively used psychological model that has been used to predict behavioral intention in different perspectives. This study aims to investigate behavioral intention in investing in Colombo Stock Exchange (CSE) by applying this model. A questionnaire was used to gather data regarding to the behavioral intention, Attitude, Subjective Norms and Perceived Control Behavior from investors of CSE. A standard questionnaire of TPB was administered among 200 active individual investors in CSE for the purpose. The number of respondents is 96. We adopted two binary outcome tests, namely; Binary Logistic Regression Analysis and Probit Regression Analysis for the statistical inferences. Also, Cronbach's Alpha, KMO & Bartlett's test and Person's correlation test were employed as diagnostic tests. The statistical results revealed that a subjective norm is statistically significant under both analysis techniques and two other variables are statistically insignificant. Finally, it suggests that there is a significant impact from subjective norms on the behavioral intention to buy shares in CSE while attitude and perceived control behavior not impact on behavioral intention in investing CSE.

Key words: *Theory of Planned Behavior, Behavioral Intention, Binary Logistic Regression, Probit Analysis.*

1. Introduction

People make important decisions in the day to day life under different circumstances. Among the decisions they made one of most important and perhaps most influential decisions on the individual's future prospect and prosperity is the investment decisions. More often than not, it is obvious that the investors gauge the risk return trade off before putting their money for various investments. In the financial sector globally, wide range of investment avenues are available for the investors, namely, real estate, bond market, gold market, money market and stock market. The

investment in capital market is rated as one of the riskiest avenues available for investment. The peculiarity of the investment is that though one invests today the benefits of the investment span through a future period. The investment in stock market is high risky as the investors can claim only for the residual income which suggests that shareholders are paid after paying for all other external parties. As a result of this inherent nature of risk the, academics and practitioners have developed some econometric models to capture the risk of their investment. The famous models are Capital Assets Pricing Model (CAPM), Fama and French Three Factor Model, Arbitrage

Pricing Theory (APT). This paper does not attempt to discuss the properties of these models instead a new approach to investors buying decision is explored.

Today, the validity of these models subjected to serious criticism among the stakeholders of the capital markets. This induced the invention of new approaches to seek the determinants of buying decisions of stocks. Now the finance arena is moving towards the behavioral aspect of investment rather fundamental approaches. This transition uncovers several approaches to validate the behavioral finance philosophies in the finance world. The recent evidence also reveals that the irrational behavior which guided by the psychology of the investors is one of the major contributory factors for the investment decision. There is a dire need of academic research in this area to establish the validity of the behavioral characteristics of individuals in making investment decisions.

Thus, this paper aims to shed lights on the behavioral finance by adopting a famous model in psychology which is called Theory of Planned Behavior (TPB). This model is a generic model where it can be applied to explain the behavior of people in different situations. Therefore, this paper attempts to explain the impact of psychological behavior of the investors on buying decision of stocks. Several models have been developed to explain the human behavior. Among them the TPB has been used by previous studies in various fields. As previously mentioned, application of psychological models for the investors' decisions is an emerging area in behavioral finance. However, the evidence based findings are very limited in this area. This paper attempts to bridge this gap by applying TPB in the capital market context. Moat specially, this research aims to achieve the following objectives:

- a. To explore the impact of attitude on the intention to buy shares in the market
- b. To examine the influence of subjective norms on the intention to buy shares
- c. To study the intention towards trading on trading behavior of individual investors

2. Theory of Planned Behavior (TPB)

Before go in to the application of the model this section looks at the properties of the model and its theoretical foundation. The TPB is an extension of Theory of Reasoned Action. Ajzen and Fishbein (1975, 1980) introduced the theory of reasoned action (TRA). This resulted from attitude research from the expectancy value model. The TRA is related to the voluntary behavior. However, it was revealed that the behavior is not 100% appeared voluntarily and under control, this resulted in the addition of perceived control. With this addition, the theory was called Theory of Planned Behavior (TPB) (Ajzen 1991). TPB is a theory which predicts deliberate behavior, because the behavior can be deliberative and planned.

Attitudes

This suggests that the degree to which a person has a favorable or unfavorable evaluation of the behavior of interest. It entails a consideration of the outcomes of performing the behavior. When this applies to the stock market investment the outcome of the behavior is the expected return from the investment. The investor may be exposed to favorable or unfavorable situation, if the investor cannot achieve the expected returns as determined by his or her valuation, that is unfavorable situation and if the investor can achieve the expected return which is favorable situation.

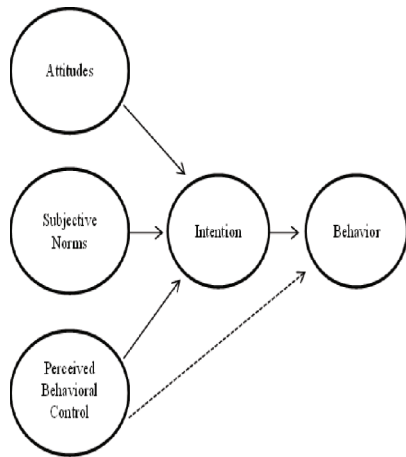


Figure 1 The Model of the Theory of Planned Behavior, Ajzen (1991)

Behavioral intention

The model defines the behavioral intention as the motivational factors that influence a given behavior where the stronger the intention to perform the behavior, the more likely the behavior will be performed. Intention to buy shares in the stock market is induced by several factors. Higher return compared to other available avenues for investment, if the investor is willing to accept risk, the investor will get more return. Therefore, the aggressive investors who are capable of bearing more risk have stronger intention to buy shares and more likely the behavior will be performed. The other inducing factor is the liquidity, the existence of secondary market assists the investors to sell their shares when they need to sell them. Therefore, the investors who look for the liquidity aspect of the shares have a stronger intention to buy highly liquid shares and more likely the behavior will be performed. Further, some investors have an attitude that, having a good investment portfolio is a social prestige. Those investors have a stronger intention to buy shares and more likely the behavior will be performed.

Subjective norms

This suggests the belief about whether most of the people approve or disapprove of the behavior. It relates to a person's belief about whether peers and people of importance to the person think he or she should engage in the behavior. It is the common habit of the people to get the views of the peers before making important decisions. An investor also, consults some investors in the stock market and will get some clues about the opportunities available if they invest in shares.

3. Previous studies

Behavioral finance is one of novel aspects in the finance. Behavioral finance has been studied by many psychologists and economists from different perspectives. The Theory of Planned Behavior is an extent version of Theory of Reasoned Action (Fishbein and Ajzen 1975) in that the construct perceived a behavioral control has been added. In the last two decades, Theory of Planned Behavior provided greater support for the study a wide range of behavioral intentions.

Moreover, the Theory of Planned Behavior has been applied at different approaches to predict behavioral intention. For example, Perry, Brudney et al. (2008) applied theory to analyze public service motivation, Carpenter & Reimers (2005) employed the theory in estimating managerial decisions and Partridge & Ho (2003), Mohan and Bhuvanam (2014) utilized theory of planned behavior to test behavioral intention in internet stock trading etc.

Conversely, the Theory of Planned Behavior has been used by Phan and Zhou (2013) to study factors influencing investors' behavior in Vietnamese Stock Exchange. Their study applied Structural Equation Modeling (SEM) on 472 individual investors' for the survey. According to Phan and Zhou (2013), attitudes, subjective

norms and perceived control behavior are significantly impact on individuals' investment intention. The study proved that, gender has high variation regarding the relationship between attitude toward investment and four psychology factors which considered (over confidence, excessive optimism, psychology of risk and heard behavior), relationship between attitude toward investment and investment intention, relationship between subjective norms and investment intention as well as relationship between perceived control behavior and investment intention. Partridge and Ho (2003) employed Theory of Planned Behavior on 291 individual responders to analyze the investors, behavior of internet stock trading in Singapore. To sum up, the results highlighted that the users have strong confident in stock trading through information technology and attitudes, subjective norms, perceived behavioral control influence on intention toward internet based trading system.

Similarly, Mohan and Bhuvanam (2014) contributed to finance literature from modeling investors' behavior toward online share trading by adopting Theory of Planned Behavior. Results of this study indicate that social factors (subjective norms, perceived behavioral control) have strong positive relationship with behavioral intention. Furthermore, attitude is not significant with behavioral intention and attitude is a weak predictor in Mohan's and Bhuvanam (2014) conclusion. Ali, Zani et al. (2005) provided evidence of attitude and perceived behavioral control have direct positive significant influence to investors' intention to invest in Malaysian Islamic Unit Trust Funds. In this study also collected information and tested TPB regarding to the attitude, subjective norms and perceived behavioral control. However, their study found that subjective norms have not significant effect on behavioral intention in Islamic Unit Trusts Funds.

Gopi and Ramayah (2007) used Theory of Planned Behavior to predict intention to online share trading. The study indicates that the positive impacts of attitude, subjective norms and perceived behavioral control on behavioral intention of Internet stock trading and that Theory of Planned Behavior could be a useful model for explaining changes in behavioral intention and actual usage. Echchabi and Abd et al. (2012) have conducted a study on customers' intention toward Islamic banking services. They also provided supportive evidence that attitude, social influence as well as perceived behavioral control are significant to the intention towards Islamic banking services.

On the other hand Mahastanti and Hariady (2014) investigated the factors which influence the investment intentions for women in Indonesia, by employing the Theory of Planned Behavior. They used the theory of Planned Behavior in order to describe more deeply about the relationships between beliefs and behaviour. This result indicated that the intention to buy financial products was influenced by perceived behavioral control but it was not affected by subjective norms and attitudes. Adam and Shauki (2012) attempted to examine the role of intention, attitude, subjective norms, and perceived behavioral control in explaining social responsible investment behaviour in Malaysia. The study found that the attitude, subjective norms and moral norm have positive impact on intention and it also positively affects behaviour toward social responsible investments.

The review of literature reveals that the TPB has been applied in several fields in investigating the impact of psychology in pursuing the behavioral actions of various individuals in different fields.

The previous literature suggests that TPB is an extensively, used model in various disciplines. This is well relevant model in explaining the

behavioral intention of investors in stock markets. The next section explains the methodology adopted in this paper.

4. Methodology

4.1 Data collection

A questionnaire was administered to gather data from active investors in CSE. We distributed the questionnaires to individual investors through Registered Investment Advisors in CSE and directly distributed the questionnaires to investors on the trading floor. Furthermore, we conducted interviews with peers who have already invested in CSE and E-mailed questionnaires to other individuals. In total, 200 questionnaires were distributed to individuals during August 2015.

4.2 Questionnaire development and measurement

The questionnaire comprised of two major aspects of investors: (1) Demographic factors (2) Psychological factors. We included 09 attributes to gather demographic factors of respondents and 15 questions used to gather psychological factors under behavioral intention (1 question), attitude (5 question), subjective norms (6 Questions) and perceived behavioral control (3questions). Most of researchers have measured on a 7-point Likert type optimal scale (Ajzen, 1991; 2002) for model TPB. Therefore, in this study we also used 7-point Likert scale with 1= strongly unlikely to 7= strongly likely for measurement.

4.3 The sample analysis

As previously mentioned, 200 questionnaires were distributed to individuals during August 2015. Out of that the response rate is 96

individual investors which are sufficient for the statistical estimation. The majority of respondents were male (84%) and 16% of respondents were female. The grouping under employment category revealed that 61% of individuals are from private sector and 14% government sector, 20% from semi government sector and 5% self-employment. The analysis of income level revealed that 74% of respondents were reported their annual income level is above two hundred thousand. Of these respondents, 51% are graduates.

4.4 The statistical model

The dependent variable (intention) is a binomial response variable because it takes only two values of intention or non-intention. Independent variables (attitude, subjective norms and perceived control behaviour) are continuous variables defined on a continuous scale of 1 to 7. Therefore, to interpret binary outcomes this study utilized Binary Logistic Regression Analysis and Probit Regression Analysis.

The binary logistic regression is;

$$P(Y) = \frac{e^{b_0 + b_1x_1 + b_2x_2 + \dots + b_nx_n}}{1 + e^{b_0 + b_1x_1 + b_2x_2 + \dots + b_nx_n}}$$

Where,

P = Probability of Y occurring

e = Natural logarithm base

b₀ = Intercept

x₁ = Predictor value

The Probit model takes from the,

$$Pr = (Y = 1 / x) = \Phi(x^1 \beta)$$

Where,

Pr = Probability

ϕ = Cumulative distribution function of the standard normal distribution

β = Maximum likelihood

5. Results and discussion

5.1 Reliability analysis

The Cronbach's Alpha was utilized to measure the reliability of questionnaire. According to the Table 1, the value of Cronbach's Alpha is 0.919. Guieford (1965) suggests when Cronbach's Alpha is more than 0.7; it shows the questionnaire has high internal reliability. In here, Cronbach's Alpha of is greater than 0.7. It implies that the reliability of questionnaire is acceptable.

Table 1: Reliability statistics

Cronbach's Alpha	N of Items
.919	15

5.2 KMO and Bartlett's Test

KMO and Bartlett's test is used to measure sample adequacy. Kaiser (1974) recommends accepting values greater than 0.5 and that values between 0.5 and 0.7 are mediocre, values between 0.7 and 0.8 are good, values between 0.8 and 0.9 are great and values above 0.9 are superb (Hutcheson & Sofroniou, 1999). The Kaiser-Meyer-Olkin Measure of sampling adequacy is 0.891 for our study sample. It is in between 0.8 to 0.9, which falls into the range of being great. Therefore, sample size is adequate for the analysis.

Table 2 Person's correlation analysis

		Intention	Attitude	Norms	Control
Intention	Pearson Correlation	1	.330**	.398**	.257*
	Sig. (2-tailed)		.001	.000	.012
	N	96	96	96	96
Attitude	Pearson Correlation	.330**	1	.677**	.704**
	Sig. (2-tailed)	.001		.000	.000
	N	96	96	96	96
Norms	Pearson Correlation	.398**	.677**	1	.600**
	Sig. (2-tailed)	.000	.000		.000
	N	96	96	96	96
Control	Pearson Correlation	.257*	.704**	.600**	1
	Sig. (2-tailed)	.012	.000	.000	
	N	96	96	96	96

** . Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

5.3 Correlation analysis

Table 2 represents the results of Pearson correlation analysis among all variables. The results explored that all variables are positively associated with each other variables. Attitude and perceived control behavior have strong positive correlation, with a coefficient of $r = .704$ at 0.01 significant level. Correlation analysis results revealed that intention and perceived behavior are positively correlated with each other ($r = .257$) at 0.05 significant level. According to the correlation matrix, intention and attitude ($r = .330$), intention and norms ($r = .3980$) have moderate positive association at 0.01 significant level. Further, norms and control ($r = .600$) and attitude and norms ($r = .677$) have strong positive association at 0.01 significant level. Finally, correlation result exists when as one variable increases, the other variable also increases and vice versa. The correlation analysis revealed that the variables are not very closely correlated. Thus, all the variables qualify for the further analysis.

5.4 The estimation results of the binary logistic regression

The results of the Binary Logistic Regression demonstrated in Table 3. The results presented in Table 3 exhibit that subjective norms has the significant influence on the behavioral intention toward investing in CSE. Rests of two determinants are visible insignificant influence toward behavioral intention toward investing in CSE. None of the independent variables in this analysis had a standard error greater than 2. It explored that no Multicollinearity among the independent variables.

One of the diagnostic tests of Hosmer and Lemeshow test was used for goodness of fit. If the measurement is greater than the 0.5 the model is significant (Hosmer & Lemeshow, 1980). The results of Hosmer and Lemeshow showed in the Table 4. The results indicate that the significant value is more than 0.5.

Table 3: Binary logistic Regression

Variable	B	S.E.	Wald	df	Sig.	Exp(B)
Attitude	.213	.318	.449	1	.503	1.237
Subjective Norms	.672	.275	5.952	1	.015*	1.958
Perceived Control	-.086	.360	.057	1	.811	.918
Constant	-2.424	1.499	2.615	1	.106	.089

Note: (*) Significant at 0.05 Significant Levels

5.5 The estimation results of the Probit model

The statistical output of the Probit analysis is presented in the Table 5. According to the statistical output, subjective norms show a statistically significant Z values and others are statistically insignificant z values. Moreover, the Chi-square of 15.43 with p-value of 0.00015 explains whole model is statistically significant.

Table 4 Hosmer and Lemeshow Test

Chi-square	df	Sig.
5.677	8	.683

Table 5: Probit regression analysis

Variable	Coef.	Std. Err.	Z	P> z
Attitude	.1413257	.1879427	0.75	0.452
Subjective Norms	.3905228	.1592476	2.45	0.014 *
Perceived Control	-.0670706	.2113006	-0.32	0.751
Constant	-1.397035	.8713746	-1.60	0.109

Note: (*) Significant at 0.05 Significant Levels

6. Conclusion

This study used the Theory of Planned Behavior as a model for predicting the behavioral intention in investing in Colombo Stock Exchange. Two binary outcome models are used to predict impact of attitude, subjective norms, and perceived control behavior toward behavioral intention in investing in CSE. The results revealed that subjective norm is significantly influence toward investing in CSE. However, attitude and perceived control behavior do not have significant influence toward behavioral intention.

In this study subjective norms toward behavioral intention measured through Family, Close friends, Job peers, Investment Advisors and Media. The findings of this study confirm that investor's belief that opinion of peers and other important parties to individual investors is impact on their behavioral intention toward investing in CSE.

7. References

- Adam, A. A., & Shauki, E. R. (2014). Socially responsible investment in Malaysia: behavioral framework in evaluating investors' decision making process. *Journal of Cleaner Production*, 80, 224-240.
- Ajzen, I. (1980). From intentions to actions: A theory of planned behavior. In J.& J. Beckman (Eds.), *Action-control: From cognition to behavior* (pp. 1139). Heidelberg: Springer.
- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice Hall.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 179-211.
- Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior. *Journal of Applied Social Psychology*, 32, 665-683.
- Ali, S., Zani, R. M., & Kasim, K. (2014). Factors Influencing Investors' Behavior in Islamic Unit Trust: An Application of Theory of Planned Behavior. *Journal of Islamic Economics, Banking & Finance*, 10(2), 183-201.
- Carpenter, T. D., & Reimers, J. L. (2005). Unethical and fraudulent financial reporting: Applying the theory of planned behavior. *Journal of Business Ethics*, 60(2), 115-129.

- Cuong, P. K., & Zhou, J. (2014). Factors Influencing Individual Investors' Behavior: An Empirical Study of the Vietnamese Stock Market. *American Journal of Business and Management*, 3(2), 77-94.
- Gopi, M. and T. Ramayah (2007). "Applicability of theory of planned behavior in predicting intention to trade online: some evidence from a developing country." *International Journal of Emerging Markets* 2(4): 348-360.
- Guilford, J. P. (1965). *Fundamentals of statistics in psychology and education*. New York: McGraw-Hill
- Hosmer, D. W., & Lemeshow, S. (1989). *Applied logistic regression*. New York: Wiley Inter Science.
- Hutcheson, G. D., & Sofroniou, N. (1999). *The multivariate social scientist: Introductory statistics using generalized linear models*. Sage.
- Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika*, 39(1), 31-36.
- Mahastanti, L. A., & Hariady, E. (2014). Determining the factors which affect the stock investment decisions of potential female investors in Indonesia. *International Journal of Process Management and Benchmarking*, 4(2), 186-197.
- Mohan, S.R., & Bhuvanam, S. (2015). A study on modeling investors behavior towards online share trading, Coimbatore. *Journal Impact Factor*, 6(1), 44-54.
- Partridge, L., & Ho, P. S. (2003, January). A retail investor's perspective on the acceptance of Internet stock trading. In *System Sciences, 2003. Proceedings of the 36th Annual Hawaii International Conference on* (pp. 11-pp).
- Perry, J. L., Brudney, J. L., Coursey, D., & Littlepage, L. (2008). What drives morally committed citizens? A study of the antecedents of public service motivation. *Public administration review*, 68(3), 445-458.