How Much Demographically Diversified Are They in Making Decision to Invest in ICT Companies?

A Study on Two Million Bangladeshi Investors

Md. Rakibul Hasan
Lecturer, Department of Management Information Systems
Faculty of Business Studies, University of Dhaka
Dhaka – 1000, Bangladesh
hasan.mr@du.ac.bd

Asif Imtiaz
Lecturer, Department of Management Information Systems
Faculty of Business Studies, University of Dhaka
Dhaka – 1000, Bangladesh
asifimtiaz.mis@du.ac.bd

Md. Shakil Ahmad
Department Head- Advisory Services
United Finance Limited
22, Kazi Nazrul Islam Avenue, Dhaka-1000
Shakil152@gmail.com

Mina Mahbub Hossain, MSc(BSU), Indiana, USA
Assistant Professor, Department of Tourism and Hospitality Management,
University of Dhaka, Dhaka-1000, Bangladesh
mmhossain@du.ac.bd

Abstract

The primary purpose of this study is to explore the demographic (i.e., age, gender, profession, years of trading experience, and region) diversity of the capital market investors those are having investments on ICT companies and those are not. Along with that primary objective, another issue is addressed in this research paper which is portfolio diversification level of the ICT company investors and non-ICT company investors. There is no overall gender divide in IT investment. Older and experienced traders have less attraction toward capitalizing IT companies. Homemakers, private service holders, male students, and businessmen have higher odds in favor of investing in IT companies compared to others.

Keywords

ICT Company Investors, Capital Market, Demographic Diversity of Investors, Logistic Regression, Bangladesh

1. Introduction

Stock or Capital Market refers to an organized platform of collecting fund from individual or institutional investors for meeting-up the capital requirements of listed companies (Investopedia, 2018). In Bangladesh there are two stock markets – (a) Dhaka Stock Exchange (DSE) and (b) Chittagong Stock Exchange (CSE). These are regulated by the Securities and Exchange Commission (SEC) of Bangladesh (BSEC, 2018). A study, focusing the context of Bangladesh, has categorized the investors into four groups in terms of their capability and opportunity of using and processing information required to make an investment decision (Hoque, 2007). These classifications are – (a) non-informed investors (depend on only market speculation and rumor), (b) medium informed investors (try to maintain an actively managed portfolio), (c) highly informed investors (institutional investors like banks), and (d) perfectly informed investors (very few investors those are having the actual information about the market) (Hoque, 2007). In an ideal capital market, this imbalance is unexpected and unfortunate. Because, it allows very few investors to exploit the market and promotes the gambling intention of the investors (Mobarek, Mollah, & Bhuyan, 2008).

However, in the stock market of Bangladesh, there are 22 sectors or industries of investment and 571 listed companies of which there are only 8 companies in the ICT sector (DSE, 2018). In stock markets like New York Stock Exchange, NASDAQ, or Japan Stock Exchange, capital shares of ICT companies are considered as blue cheap stocks, which enhance the competitiveness of these countries as tech giants (Hasan & Raturi, 2003) (Dos Santos, Peffers, & Mauer, 1993). But in Bangladesh, the scenario is quite different (Ahmed & Imam, 2017). The ICT and telecom companies listed in DSE and CSE are Bikory.com, REVE Systems, Robi, Banglalink, GP, BTCL, Teletalk, United Commination Systems, etc. (DSE, 2018). But, as we can see the majority of them are from telecommunication sector and few companies can be considered as mainstream tech firms. Moreover, other ICT companies operating in Bangladesh are reluctant to be enlisted in the stock market for funds and think that the investors may not be interested in investing technology firms. Because on the existing capital market very few investors are found to have investments in ICT companies. As a result, Bangladesh has never got the environment which can promote technological development and prosperity (SDAsia, 2018).

IT sector in Bangladesh is in the growing stage of its life cycle as per the experts and IT specialists. According to the prediction by them, this industry is expected to grow by fivefold by 2025 . In this stage, we see rapid growth of entrepreneurs and very few large companies in an industry. In the capital market of Bangladesh, the situation is exactly like this. Among 292 companies listed in the capital Market (Annual Report DSE, 2016-17), only eight in the IT sector. Therefore, in terms of market capitalization, this sector has not been able to contribute in the growth yet. But if we look at the above picture, where we have shown all eight companies' return along with the DSEX index (market return) return, we see, almost every one of them are close to the market, though we see some fluctuations in some companies, it not rare for companies in the growth stage. We have added a histogram at the end of all the graphs of the above figure and see that, the return is almost normally distributed. This also proves the sector stability in the shown period. In this paper, we have shown what are the demographic characteristics of the investors who has investment in the IT sector and tried to determine the characteristics that are common in those investors.

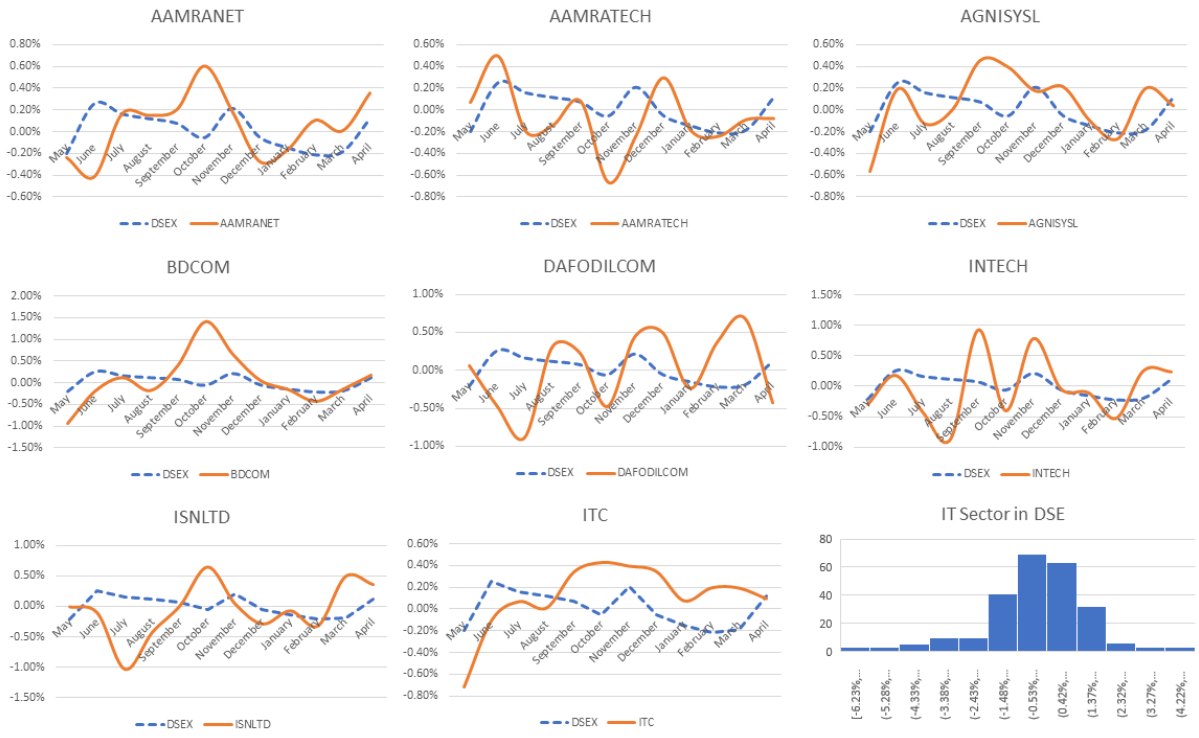

Figure 1: IT Sector in DSE

The gap found in the above discussion defines the scope and objective of this research initiative. This paper will play the role of a catalyst as it is the first explorative research project conducted on 2 million investors focusing on their demographic diversity, where the demographic characteristics of the investors include their age, sex, living area, profession, and experience of trading in stock market. The primary and only purpose of this paper is to analyze the demographic diversity of the IT investors and non-IT investors. The expected findings of this research will address the question of "how much demographically diversified they are". Along with their demographic diversity, their portfolio diversity (i.e., no of companies in the portfolio and current portfolio valuation) will also be addressed in terms of their decision to invest in ICT companies or not. Until today, no other researchers have not addressed this issue with this volume of data. The findings of this study will be in an advocacy role in further research works on this discipline.

2. Literature Review

Very few literature are found to have relevance with the topic of this study. None of these direct relevance to the context and nature of this research work because most of these research works have addressed the causal relationship between age structure of the investors and their portfolio diversification. Moreover, the context of USA, Canada, and other European countries are addressed in these literary works. A quick overview of these research works is given in the following table.

Table 1. Summary of the Literary Works

Author	Context	Description
Ball (1961)	USA	Investor's experience of trading in the stock market is accounted for their success measured by the amount of return.
Lease, Lewellen, & Schlarbaum (1973)	USA	Investor's attributes and attitudes defined by their self-perception, experience, and nature of investment strategy are emphasized as the determinants of portfolio choice and diversification.
Statman (1987)	Canada	In this study diversification is defined as the portfolio diversification represented by the combination of different financial instruments of different entities or different characteristics held by the investor.

Bakshi & Chen (1994)	USA	This paper tests the hypothesis of life-cycle investment which includes that people tend to invest more in housing or other fixed assets at their early stage of life whereas they tend to switch their investment on financial instruments at their later stage of life.
Islam, Khan, & Ahmed (1996)	Bangladesh	This study analyzed the behavioral dynamics of the capital market investors in Bangladesh. The primary purpose of this study was to assess investor's capability of perceiving and realizing technical and financial information before investment decision making.
Heaton & Lucas (1997)	Europe	Here, the diversity of portfolio choice is found sensitive to individual investor's assessment of income risk, transaction cost in the stock market, and their savings behavior. Individual investor's behavioral preferences are prioritized here and found significant in terms of determining their stock market investment pattern.
Poterba (2001)	USA, Canada, and UK	This study was conducted on the context of United States, Canada, and United Kingdom, whereas the findings implied that there was a relationship between the demographic structure of the stock market investors and their returns from stocks, bonds, or other investments. Moreover, the study findings include that during the age of 40 to 64, noted as "prime saving years", the investor's invested amount and the return from investment both are at a high level not like as their investment and return after the age of 64 or retirement.
Cresson (2002)	Europe	Age structure of the investors is regressed upon the portfolio diversification level of those investors.
Goyal (2004)	USA	This study has found the positive correlation between the age structure of the investors and their return from invested financial instruments. Furthermore, age structure is also found as a significant regressor over the equity premium in U.S economy.
(Goetzmann & Kumar, 2007)	India	The authors have indicated that the portfolio diversification varies across the factors of age, experience, personal wealth, and financial sophistication of the investors. In addition, investors holding mutual fund and foreign equity investments are more diversified than others.
Kumar & Lim (2008)	India	Here, the decision-making pattern of the investors is classified into two frames of narrow and broad. In narrow framing, investors choose and consider financial instruments separately. On the other hand, in broad framing, investors choose and consider a cluster of instruments and the collective return on the investment.
Brunetti & Torricelli (2010)	USA	In this paper, the researchers have tried to analyze the relationship between age structure and stock returns in a different context of Italy, where they have found the relationship significant likewise U.S market.
Foucault, Sraer, & Thesmar (2011); Korniotis & Kumar (2011)	USA	This research work has provided the evidence indicating that older investors are much prone to be risk averse and diversified in the USA. Moreover, they are less frequent in trading and rely most on their knowledge and experience during making the decision to invest.
Fagereng, Gottlieb, & Guiso (2013)	USA	In this paper, the researchers have addressed the life-cycle portfolio model in a different way by stating that the individual investors are likely to invest more on the stock market in their early life, whereas they gradually rebalance their investment on the stock market through reducing as they are approaching to retirement. The researchers have acknowledged their risk aversion tendency behind this double adjustment process.
Arnott & Chaves (2015)	Europe	Besides stock market return, real per capita income and GDP of an economy are also explained by the age structure of the population.
Jokhi & Pandya (2016)	India	Along with the age structure of the population, their dependency ratios and growth rates are found significant predictor of their returns from stock market investment in this study.
Davenport & Mann (2016)	Europe	Aged people are found to be reluctant in investing risky assets whereas among the younger people the tendency to invest in risky financial instruments are more likely than the older people.

Singh & Yadav (2016)	Europe	This study tried to find the impact of gender diversity influencing the investor's decision to invest in equity shares in India and found that females were more risk-averse than the males.
Ghazinoory, Khorasani, Rostamy, Taheriattar, & Rashidirad (2016)	Middle East	This study on Tehran Stock Exchange reveals that the performance of ICT industry on the stock market has a remarkable impact on the national economy in terms of development.
Abreu & Mendes, 2018	Europe	A study on 129,461 investors for 10 years period shows that the investors behave differently in two financial different markets of the stock market and warrant market whereas their socio-demographic characteristics are controlled. In this study investor's behavioral and gambling intention are analyzed.

3. Methods

3.1 Procedure

For this study, we took the help of Central Depository Bangladesh Ltd. (CDBL) who provided us with their database containing information of the investors. Around 2.7 million anonymous data came into our hand with information on age, gender, profession, living area (administrative division), years of trading, number of companies where they individually invested, valuation of individual investor's portfolio, investment on IT companies. We set three criteria to recruit our sample set from the database for the sake of our analysis. Investors under the age of 20 and above that of 70 were removed. Inactive investors as in who opened their BO account but didn't invest in any single company were filtered out. We confiscate investors from our analysis whose current portfolio valuations were under 30,000 BDT. Thus, the final sample size was of 5, 33, 213 investors.

3.2 Data Preparation

Data on IT investment of any individual was recorded as a binary response (Yes and No). We coded Yes as '1' and No as '0' while generating the variable *IT_Inv*. Gender was coded as male is equal to '1' and female is equal to '0'. In case of labeling the administrative division where the investors abide in, we coded in the manner where Dhaka = 1 and 0 otherwise since we assumed significant variation in investment pattern between investors from Dhaka Division and that from outside Dhaka. Thus the variable *Division_DHK* was generated. When it came to the point of stratifying profession, we particularly were interested in identifying the IT investment pattern of business persons, housewives, students and private service holders. Four new variables were initiated from the professional field of sample dataset for this purpose and they are *BusinessPerson* (business = 1, 0 otherwise), *Homemaker* (homemaker = 1, 0 otherwise), *Student* (student = 1, 0 otherwise) and *PrivateService* (private service holder = 1, 0 otherwise). Again, being in these professions, except housewife, we tried to find the effect of being a male on the IT investment pattern. Therefore, we introduced three interaction variables *MaleBusinessPerson* (*Gender*BusinessPerson*), *MaleStudent* (*Gender*Student*) and *MalePrivateService* (*Gender*Private Service*). Data on age, current portfolio valuation in taka and number of invested companies were unchanged while entering the analysis as variables *age*, *no_of_companies* and *years_of_trading*.

3.4 Model

Our research focus was on demonstrating difference in IT investment pattern, if any, across the sample set. Therefore *IT_Inv* stood as the dependent variable and since *IT_Inv* is a binary outcome variable, logistic regression was chosen as the tool of analysis. We took *age*, *no_of_companies* and *years_of_trading*, *Division_DHK* , *BusinessPerson*, *Homemaker*, *Student*, *PrivateService*, *MaleBusinessPerson*, *MaleStudent*, *MalePrivateService*.

Odds in favor of investing in IT companies were measured by the following model:

$$\begin{aligned}\ln\left[\frac{P_i}{1-P_i}\right] = {} & \beta_0 + \beta_1(age) + \beta_2(no\_of\_companies) + \beta_3(years\_of\_trading) + \beta_4(Gender) \\ & + \beta_5(Division\_DHK) + \beta_6(Business\_Person) + \beta_7(Homemaker) \\ & + \beta_8(Private\_Service) + \beta_9(Student) \\ & + \beta_{10}(Male\_Student) + \beta_{12}(Male\_Business\_Person)\end{aligned}$$

where P_i is the probability of investing in IT companies by an individual investor.

4. Results and Analysis

4.1 Demographic Information

Only 5.81% of the investors have invested in IT companies (N = 30985). Male investors, not unusually, are dominant (79.12%, N = 421872) over female investors (20.88%, N = 111342) in our analyzed sample. Private Service holder investors (47.15%, N = 251382) are way ahead in number from investors from other professions. The government service holders (N = 12737), in contrast, account for only 2.39% of the total sum of investors. We found 1.72% investors from the academic arena (N = 9170). Business persons (26.69%, N = 142294) are the second largest group of investors. 12.12% homemakers (N = 64607) are in action in the capital market, among which, female homemakers as in housewives (N = 61712) are of 95.52%. Students (N = 39247) are also investing in the capital market and we saw 7.36% of the total investors are students. Professional practitioners (1.95%, N = 10432), Retired employees (0.62%, N = 3326) and Unemployed persons (0.003%, N = 18) contribute very little to the total number of investors. In our sample, 65.75% investors are from Dhaka division (N = 350593). There are some foreign expats who have an investment in the capital market, though very negligible in amount (0.008%, N = 455).

Table 2. Classification of investors in terms of IT-investment

IT Investment (0: NO; 1: YES)	Frequency	Percent	Cumulative Percentage
0	502,228	94.19	91.19
1	30,985	5.81	100.00
Total	533,213	100.00	

Table 3. Cross-tabulation of Gender and Occupation

	SEX		
OCCUPATION	Female	Male	Total
Academician	2,891	6,279	9,170
Business	7,683	134,611	142,294
Govt. Service Holder	1,382	11,355	12,737
Homemaker	61,712	2,895	64,607
Private Service Holder	26,798	224,584	251,382
Professional Practitioner	1,573	8,859	10,432
Retired from Service	190	3,136	3,326
Student	9,104	30,143	39,247
Unemployed	8	10	18
Total	111,341	421,872	533,213

Table 4. Cross-tabulation of Sex and Administrative Division

	SEX		
DIVISION	Female	Male	Total
ABROAD	73	382	455
BAR	1,161	6,070	7,231
CTG	21,790	97,289	119,079
DHA	78,217	272,376	350,593
KHL	2,273	9,443	11,716
MYM	608	2,756	3,364
RAJ	3,378	14,265	17,643
RANG	310	1,532	1,842
SYL	3,531	17,759	21,290
Total	111,341	421,872	533,213

The mean age of the investors is 44.11 years (SD 10.53) and on an average, a single investor invests in 5 companies (SD 6.29). We discovered an investor who invested in 379 companies and this is the highest in our analyzed dataset.

Table 4: Summary statistics of Age, Number of Invested Companies, Years of Trading and Current Portfolio Valuation

Variable	Observations	Mean	Std. Dev.	Min	Max
age	533213	44.10828	10.52758	20	70
years of trading	533213	7.312399	3.470307	0	14
no of companies	533213	5.005405	6.28592	1	379
valuation in BDT	533213	1577728	4.53e+07	30000	2.49e+10

We have investors who have been engaged in trading for 7 years on an average (SD 3.47) with a maximum of 14 years. Average current valuation of their portfolios is around BDT. 1.5 million. The highest valuation of the portfolio is BDT. 2.49 billion.

4.2 Logistic Regression Analysis

Table 5. The result of logit analysis

IT Investment	Odds Ratio	Std. Err.	z	P>z	[95% Conf.	Interval]
age	.9915267	.0006419	-13.14	0.000	.9902694	.9927855
years_of_trading	.9589214	.0017506	-22.98	0.000	.9554963	.9623587
no_of_companies	1.112201	.0009465	124.95	0.000	1.110347	1.114058
Gender (Ref: Female)	1.036652	.0551257	0.68	0.498	.9340473	1.150528
Division_DHK	1.00808	.0130259	0.62	0.533	.9828706	1.033936
BusinessPerson	.9020604	.0692378	-1.34	0.179	.776071	1.048503
Homemaker	1.131286	.0590861	2.36	0.018	1.021209	1.253227
PrivateService	1.135439	.0662594	2.18	0.030	1.012724	1.273023
Student	.9511496	.0686904	-0.69	0.488	.8256129	1.095774
Interaction:						
MaleStudent	1.193874	.0920956	2.30	0.022	1.026353	1.388738
MalePrivateService	1.025436	.0623503	0.41	0.680	.9102324	1.15522
MaleBusinessPerson	1.391803	.1099942	4.18	0.000	1.192085	1.62498
cons	.0513452	.0030172	-50.53	0.000	.0457595	.0576128

Age seems to be a strong predictor of an investor's decision on investing in an IT company or not. The higher the age, the less likely the investor is to invest in an IT company, even if a very less likely (OR 0.99, [95% CI 0.9902694 - 0.9927855]), P = 0.00. Similar direction of association is found between trading years and IT investment (OR 0.95, [95% CI 0.95 – 0.96]), P = 0.00. As expected, as the number of companies invested in goes up, the more likely is the investor to have an IT company in his endowment (OR 1.11, [95% CI 1.110 – 1.114]), P = 0.00. This sort of finding is also true for homemakers (OR 1.13, [95% CI 1.02 – 1.25]), P = 0.18 and private service holders (OR 1.13, [95% CI 1.01 – 1.27]), P = 0.03.

However, gender and abiding in Dhaka don't appear as immense predictor since they both are insignificant at 5% level with P values equal 0.49 and 0.53 respectively.

Though being a business person or student do not influence the decision of investing in IT company significantly (P > 0.05), the interaction terms produce a somewhat different result. A male business person (OR 1.39, [95% CI 1.19 – 1.62]), P = 0.00 or a male student (OR 1.19, [95% CI 1.03 – 1.39]), P = 0.02; is more likely to invest in IT companies than their counterparts.

The likelihood ratio statistic (chi-square) is statistically significant at even 1% level, χ^2 (12, N = 533213) = 17961.20, P = 0.00.

4.3 Implications

- Still, as apparent from the demographic information, investment in the capital market is like a men's accessory. Gender divide prevails and at a strong magnitude. When it comes to IT investment, only 1% female investors (N = 5715) have at least one IT company in their portfolios, though the likelihood for males to be more IT investment-oriented is statistically insignificant.

- Older peoples don't have interest in IT companies as much as their counterparts have as per the analysis. We get this palpable sense from the observed odds ratios for age and years of trading.

- Private-service holders have more concentration in the capital market than the government service holders. One possible reason is that private employees are more hesitant about their future income flow than the government employees because of government jobs are more secure. Therefore, private employees want to make money from every possible legal source and as a part of this process; they invest more in the capital market.

- Many students are involved in the capital market. Will to obtain financial independence, cutting monetary pressure off from parents, even latent gambling mind can push them toward the market at this younger age.

- Homemakers and private service holders are more likely to invest in IT companies whereas male students and male business persons tend more to invest in those companies.

5. Limitations and Conclusion

Our analysis, in each way, focuses basically on the demographic variations those could stimulus the aspiration after investing in IT companies. As we extracted our expected dataset, we found that the number of the investors in IT sector is very stumpy compared to the whole size of the investors. IT companies don't seem to be lucrative to the majority portion of the investors due to, probably, volatility or lack of trustworthiness, even for less recognition among peer investors. Our study gives a blow to the traditionally perceived notion that gender is an issue while taking investment decision specifically on IT since IT was thought to be a toy for the boy. However, the older or the more experienced the investor, the less is the likelihood of his investing in IT companies. Perchance his technological cognition lags behind the actual progress and potential of the IT companies. Homemakers and private service holders have more positive intention over others to capitalize IT companies. Homemakers pass their leisure browsing internet, surfing television channels, roaming around social network sites which have made them techno-aware and they are not afraid to invest in IT. In our existing social dynamics, it is believed that private companies are more technologically advanced compared to other sectors and thus private service holders might also get the chance to be more close to technological aspects due to their job nature. Gender divide, to a certain extent, is visible among students and business persons because male students and male business persons are ahead in probability than females counterparts in capitalizing IT companies.

Due to inconsistency in data, we had to filter a bulk amount of observations. If those were included, who knows we could have got different results. But the result of our analysis is relatable with our perceived experience in most of the cases. Future research focus could be directed to the point that whether the IT investors are risk-lover or risk-averse, what is there psychometric state, in which cognitive sectors they vary with the non-IT investors, how big is their expectation-perception gap, do they have the positive continuance intention of investing in IT or not. Probably this study is the maiden step in Bangladesh to capture the demographic variation between IT-capitalizer and others. This paper can give IT companies at least some hints to identify who are their investors and can give researchers some food for thoughts for their future research.

6. Bibliography

Abreu, M., & Mendes, V. (2018). *Do Individual Investors Trade Differently in Different Markets?* Lisbon: Portuguese Securities Commission.

Ahmed, M. N., & Imam, M. O. (2017). Macroeconomic Factors and Bangladesh Stock Market: Impact Analysis through Cointegration Approach. *International Review of Business Research Papers, 3*(5), 21-35.

Arnott, R. D., & Chaves, D. B. (2015). Demographic Changes, Financial Markets, and the Economy. *Forthcoming in the Financial Analyst Journal*.

Bakshi, G. S., & Chen, Z. (1994). Baby Boom, Population Aging, and Capital Markets. *Journal of Business, 67*(2), 165-202.

Ball, M. (1961). Investment Company Performance: Management Performance More Valid than Investor Experience. *Financial Analysts Journal, 17*(5), 51-58.

Brunetti, M., & Torricelli, C. (2010). Demographics and Asset Returns: Does the Dynamics of Population Ageing Matter? *Ann Finance, 6*, 193-219.

BSEC. (2018, May 14). *Bangladesh Securities and Exchange Commission*. Retrieved from http://www.sec.gov.bd

Cresson, J. E. (2002). R^2: A Market-Based Measure of Portfolio and Mutual Fund Diversification. *Quarterly Journal of Business and Economics, 41*(3/4), 115-143.

Davenport, M., & Mann, K. (2016). Demography, Capital Flows and International Portfolio Choice over the Life-cycle. *Unpublished*.

Dos Santos, B. L., Peffers, K., & Mauer, D. C. (1993). The Impact of Information Technology Investment Announcements on the Market Value of the Firm. *Information Systems Research, 4*(1), 1-23.

DSE. (2018, May 14). *Dhaka Stock Exchange Limited*. Retrieved from http://www.dsebd.org/by_industrylisting1.php

Fagereng, A., Gottlieb, C., & Guiso, L. (2013). *Asset Market Participation and Portfolio Choice over the Life-cycle.* Oslo: Statistics Norway, Research Department.

Foucault, T., Sraer, D., & Thesmar, D. J. (2011). Individual Investors and Volatility. *The Journal of Finance, 66*(4), 1369-1406.

Ghazinoory, S., Khorasani, A., Rostamy, A. A., Taheriattar, G., & Rashidirad, M. (2016). Performance appraisals of ICT companies in the Tehran stock market: contradiction with the global trend. *Economic Research, 29*(1), 529–544.

Goetzmann, W. N., & Kumar, A. (2007). *Equity Portfolio Diversification.* Review of Finance.

Goyal, A. (2004). Demographics, Stock Market Flows, and Stock Returns. *Journal of Financial and Quantitative Analysis, 39*(1), 115-142.

Hasan, R., & Raturi, M. (2003). Does Investing in Technology Affect Exports? Evidence from Indian Firms. *Review of Development Economics, 7*(2), 279-293.

Heaton, J., & Lucas, D. (1997). Market Frictions, Savings Behavior, and Portfolio Choice. *Macroeconomic Dynamics*(1), 76-101.

Hoque, A. (2007). Co-movement of Bangladesh Stock Market with Other Markets: Conintegration and Error Correction Approach. *Managerial Finance, 33*(10), 810-820.

Islam, M., Khan, H.-a. R., & Ahmed, M. (1996). The Behavior of Stock Investment in Bangladesh. *Savings and Development, 20*(4), 447-460.

Jokhi, D. M., & Pandya, D. (2016). Impact of Demographic Transition on Stock Markets - A Review Perspective. *Internaional Journal of Innovative Research and Development, 5*(3), 194-196.

Klemkosky , R. C., & Martin, J. D. (1975). The Effect of Market Risk on Portfolio Diversification. *The Journal of Finance, 30*(1), 147-154.

Korniotis, G. M., & Kumar, A. (2011). Do Older Investors Make Better Investment Decisions? *The Review of Economics and Statistics, 93*(7), 244-265.

Kumar, A., & Lim, S. S. (2008). How Do Decision Frames Influence the Stock Investment Choices of Individual Investors? *Management Science, 54*(6), 1052-1064.

Lease, R. C., Lewellen, W. G., & Schlarbaum, G. G. (1973). The Individual Investor: Attributes and Attitudes. *The Journal of Finance, 29*(2), 413-433.

Mobarek, A., Mollah, A., & Bhuyan, R. (2008). Market Efficiency in Emerging Stock Market: Evidence from Bangladesh. *Journal of Emerging Market Finance, 7*(1), 17-41.

Poterba, J. M. (2001). Demographic Structure and Asset Returns. *The Review of Economics and Statistics, 83*(4), 565-584.

Poterba, J. M. (2001). Demographic Structure and Asset Returns. *The Review of Economics and Statistics, 83*(4), 565-584.

SDAsia. (2018, May 14). *Great Investment Potential in Bangladesh ICT Sector: Employment for 2 million People by 2021*. Retrieved from https://sdasia.co/2016/10/19/40406/

Singh, J., & Yadav, P. (2016). A Study on the Factors Influencing Investors Decision in Investing in Equity Shares in Jaipur and Moradabad with Special Reference to Gender. *Amity Journal of Finance, 1*(1), 117-122.

Statman, M. (1987). How Many Stocks Make a Diversified Portfolio? *The Journal of Financial and Quantitative Analysis, 22*(3), 353-363.

Ulrich, T. A. (1975). The Effect of Portfolio Size on Portfolio Performance: An Empirical Analysis. *The Journal of Finance, 30*(3), 921-922.

7. Acknowledgement

We would like to convey our heartfelt gratitude to Dr M Khairul Hossain, Chairman, Securities and Exchange Commission of Bangladesh and Professor at University of Dhaka for his assistance and inspiration by facilitating us with the required data set used in our research. Our heartfelt gratitude also goes to United Finance Limited for its overall support in our research and conference attendance.

8. Biographies

Md. Rakibul Hasan is currently serving as a Lecturer of Department of Management Information Systems (MIS), University of Dhaka. He has been serving as an academician since 2016. He did his under-graduation (BBA) and post-graduation (MBA) from the Department of Management of Information Systems (MIS), Faculty of Business Studies, University of Dhaka, Bangladesh. He has got his research interest on the disciplines of data science, business analytics, information systems research, financial markets, and social implications of technology. He is also teaching the courses relevant to his research interest on the under-graduation level. He has also published several academic papers on different indexed journals those are reflecting his research interest and capability of doing good works.

Asif Imtiaz is a lecturer in Economics, Department of Management Information Systems, University of Dhaka. Mr. Imtiaz holds a Bachelor of Social Science degree in Economics from University of Dhaka and a Master of Social Science degree in Economics from the same university. He has taught courses in macroeconomics, microeconomics, and statistics. Mr. Imtiaz also serves as a research associate in Center for Project Management and Information Systems. His research interest includes economics, digital divide, eHealth, telemedicine, and shadow education. His latest article on shadow education has been published by Canadian Center of Science and Education.

Md. Shakil Ahmad is currently holding the position of Department Head- Advisory Services in United Finance Limited, one of the prominent financial institutes of Bangladesh. He has been working in the financial sector for more than five years. He earned his MBA from Institute of Business Administration (IBA) and BBA from Department of Finance, University of Dhaka. He also has an MSS in Economics from East West University. He obtained several certificates online on Game Theory, Economic Policy making, Financial Modeling from Stanford University, IE Business School and Wharton Business School, University of Pennsylvania respectively. He has published three journal papers on Exchange Traded Fund, Crowdfunding and Special Economic Zone and regularly writes in dailies on contemporary issues. His research interest lies in Analyzing the origins and performances of financial markets and instruments to measure their country and situation specific applicability, Defining the emerging and underdeveloped financial markets and market participants with behavioral finance, Finding and redefining the transmission mechanisms of macroeconomic changes on different financial markets and countries for the fourth industrial revolution.

Mina Mahbub Hossain is currently working as an Assistant Professor at the Department of Tourism and Hospitality Management, University of Dhaka, Dhaka-1000, Bangladesh. Recently he has obtained his second master's degree from Department of Mathematical Sciences, Ball State University, Indiana, USA.He has got twelve published journal articles to his credit that were highly appreciated both in local and international research community. His main research interests include mathematical modeling of financial data set originating from stock markets and international finance. He has been serving both as a researcher and academician since 2009. Also, he has attended several international conferences on Business and Economics areas. At present, He is looking for a PhD (major in Finance) admission at top Business Schools in USA.