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ABSTRACTING AND INDEXING

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DOES CAPITAL STRUCTURE MATTER? EFFECTS ON PROFITABILITY OF FIRMS LISTED AT THE NAIROBI SECURITIES EXCHANGE

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Keywords	ABSTRACT
Capital Structure, Profitability, Debt /Equity Ratio, Return on Capital Employed	Capital structure of firms is an important aspect in finance which seeks to determine the optimal capital structure that a firm should maintain. Various theories have been put across to address this issue. This paper examines the relationship between capital structure and profitability of firms listed at the Nairobi Securities Exchange (NSE). The study employed a descriptive research design. A census study of 49 firms listed at the NSE that were operational from 2009 and 2013 was undertaken. These companies comprised of all the segments at NSE. Secondary data was collected for a period of five years from financial statements of the firms and the NSE handbook. The findings of the study indicated that capital structure had a significant negative influence on the profitability of firms listed at the NSE.
JEL Classification C10, G30, M10	

1.INTRODUCTION

Capital structure of a firm is the combination of debt and equity that make up the sources of corporate assets. It is the way a firm is financing its assets through a combination of equity and debt (Ahmadpour & Yahyazadehfar, 2010). According to Ghalibafasl (2005), combination of various financial sources of a company is called capital structure. The best combination of financial resources for a company is optimal or desirable capital structure. The study on capital structure attempts to explain the mix of securities and financing sources used by companies to finance investments (Myers, 2001). The capital structure choice is an important decision for any company given that it has an effect on the financial performance of firms (Maina & Ishmail, 2014). A firm should work towards maximizing its value and at the same time maximize the shareholders' interests. The value of a firm is defined as the market value of debt plus the market value of equity (Ross, Westerfield, Jaffe, & Kakani, 2009). A firm's financial performance, in the view of the shareholder, is measured by how better off the shareholder is at the end of a period, than he was at the beginning and this can be determined using ratios derived from financial statements; mainly the balance sheet and used to compare a firm's ratios with other firms or to find trends of performance over time (Berger & Patti, 2006). Capital structure of any institution should therefore be well managed to ensure that the firm remains in operation and it is

able to finance its projects. With unplanned capital structure, companies may fail to economize the use of their funds. Consequently, its being increasingly realized that a company should plan its capital structure to maximize the use of funds and to be able to adapt more easily to the changing conditions (Pandey, 2009).

Capital structure and financial performance of firms have been studied worldwide with different results. A study by Ghosh (2007) showed that debt relate negatively with a firm's performance. It argued that the level of debt associated inversely with firm's performance, because creditors use loans as disciplinary tool on the firm. Creditors impose restrictions such as: preventing the firm from distributing the earnings to shareholders, imposing restrictive conditions on the loans by increasing the interest rates, and requiring sufficient collaterals on loans. These restrictions will lead the firm to focus on how to pay the debt burden without much concern in achieving earnings thus reflect adversely on firm performance. Financial leverage affect positively on the expected performance, which is explained by the fact that low growth first attempts to depend on the borrowing for utilizing the expected growth opportunities and investing borrowed money at the profitable projects, thus increasing the firm performance (Dessi & Robertson, 2003). However, according to Titman and Wessels, (1988), firms with high profit levels, all things being equal, would maintain relatively lower debt levels since they can realize such funds from internal sources. A study of the Srilankan companies showed that the use of long-term debt is relatively low. The mean leverage in Sri Lanka was estimated as 13.5%, long-term debt to equity ratio is 24%. This evidence suggested that the use of debt financing in Sri Lanka was significantly low (Lalith, 1999). A study carried out in Ghana concluded that listed Ghanaian banks used 80.23 % debt and 17.77% equity, and therefore suggesting that the capital structure of Ghanaian banks is hugely skewed towards debt (Gatsi, 2012). Debt creates for the managers an incentive to work harder and encourage them to utilize the best invested opportunities. This leads to reduced risk of bankruptcy, thus reducing debt cost and enhancing the firm performance. Greater financial leverage may affect managers and reduce agency costs through the threat of liquidation, which causes personal losses to managers of salaries, reputation, and through pressure to generate cash flow to pay interest expenses (Grossman & Hart, 1982). According to the tradeoff theory, more profitable companies should have more income to shield from taxes. One of the most important parameters on the valuation and direction of economic enterprises in the capital markets is the capital structure (Drobetz & Fix, 2003). An important question facing companies in need of new finance is whether to raise debt or equity. In spite of the continuing theoretical debate on capital structure there is relatively little empirical evidence on how companies actually select between financing instruments at a given point of time in order to attain optimum profitability (Lalith, 1999). Managers have numerous opportunities to exercise their discretion with respect to capital structure decisions. The capital structure employed may not be meant for value maximization of the firm but for protection of the manager's interest especially in organizations where corporate decisions are dictated by managers and shares of the company closely held (Dimitris & Psillaki, 2008). The rest of the paper is organized as follows: In the next section we discuss the detailed literature on the relationship between capital structure and profitability. In

section three, we outline the methodology adopted for the study, then results in section four. Finally, we draw our conclusions from the study in section five.

2.LITERATURE REVIEW

2.1.Theoretical Framework

Modigliani and Miller Capital Structure Theory

According to Modigliani and Miller (MM), (1958) in their theory of capital structure irrelevance, it states that financial leverage does not affect the firm's market value. They hypothesised that in perfect markets, it does not matter what capital structure a company uses to finance its operations. They claimed that the market value of a firm is determined by its earning power and by the risk of its underlying assets, and that its value is independent of the way it chooses to finance its investments or distribute dividends. This proposition assumes no taxes and no bankruptcy costs. This theory was based on very restrictive assumptions that do not hold in the real world. (Abor, 2004). MM reviewed their earlier position by incorporating tax benefits as determinants of the capital structure of firms. They proposed that since interest is a tax-deductible expense, firms should use as much debt capital as possible in order to maximise their value (MM, 1963). Miller (1977) argued that a firm could generate higher after tax income by increasing the debt-equity ratio and this additional income would result in a higher pay-out to stockholders and bond holders but the value of the firm need not increase. Higher taxes on interest payments than on equity returns reduce or eliminate the advantage of debt finance to the firm. Green, Murinde, and Suppakitjarak (2002) stated that tax policy has an important effect on capital structure decisions of a firm. This is in the sense that corporate tax allows firms to deduct interest on debt when computing taxable profits. This suggests that tax advantages derived from debt would lead firms to be entirely financed through debt because interest payments associated with debt are tax deductable whereas payments associated with equity such as dividends aren't tax allowable deductions.

Trade –off Theory

This theory was first developed by Modigliani and Miller, (1958). It states that a target debt-equity ratio is approached at the point where the tax advantage of debt is offset by the costs of prevailing market imperfections. A firm's optimal debt ratio is usually viewed as determined by a tradeoff of the costs and benefits of borrowing. Firms balance tax savings from debt against dead weight bankruptcy costs. The key implications of the tradeoff theory is that leverage exhibits target adjustment so that deviations from the target are gradually eliminated (Myers, 1984). The tradeoff theory predicts a positive relationship between earnings and leverage (Shyam-sunder & Myers, 1999), a prediction which appears inconsistent with the well-established empirical evidence of a negative earnings and leverage relationship by Rajan and Zingales, (1995). Optimal capital structure is obtained when the firm's value is maximised and each firm sets a target debt –equity ratio in an industry class with a gradual attempt to achieve it. However, adjustment costs often deter firms from fully adhering to their optimal leverage ratios (Drodetz & Wanzenried, 2006).

Pecking Order Theory

According to this theory, companies prioritize their sources of financing from internal financing to equity according to the law of least effort or of least resistance, preferring to raise equity as a financing means of last resort. The theorists argued that there is an asymmetric information problem between managers and investors. Investors would like to discount a firm's new securities when they are issued, and thus managers can anticipate price discounts in advance (Myers & Majluf 1984). Shyam –Sunder and Myers, (1999), examined the broad applicability of the pecking order theory. Their evidence based on a large cross-section of US publicly traded firms over long time periods showed that external financing is heavily used by firms. On average, net equity issues track the financing deficit more closely than do net debt issues. These facts do not match the claims of the pecking order theory. According to Lemon and Zender (2010), the idea of debt capacity is important in understanding the rejections of the pecking order theory. Consideration of debt capacity suggests that when not constrained by debt capacity, firms issue debt, but when constrained, they issue equity. They defined debt capacity as the point where adding more leverage reduces the firm's value.

Agency Theory

The theory explains how to best organize relationships in which one determines the work while another party does the work. In this relationship, the principal hires while the agent does the work. In corporations, the principals are the shareholders of a company, delegating to the agent i.e. the management of the company, to perform tasks on their behalf. Agency theory assumes both the principal and the agent are motivated by self-interest. Agency theory extends the analysis of the firm to include separation of ownership and control, and managerial motivation. In the field of corporate risk management agency issue have been shown to influence managerial attitudes toward risk taking and hedging (Smith & Stulz, 1985). Consequently, agency theory implies that defined hedging policies can have important influence on firm value. The latter hypotheses are associated with financing structure, and give predictions similar to financial theory. Managerial motivation factors in implementation of corporate risk management have been empirically investigated in a few studies with a negative effect (Geczy, Minton,& Schrand 1997). Financial policy hypotheses were tested in studies of the financial theory, since both theories give similar predictions in this respect. All in all, the bulk of empirical evidence seems to be against agency theory hypotheses however. Agency theory provides strong support for hedging as a response to mismatch between managerial incentives and shareholder interests.

2.2.Empirical Evidence

The choice of capital structure is fundamentally a marketing problem. The firm can issue dozens of distinct securities in countless combinations, but it attempts to find the particular combination that maximizes market value (Brealey & Myers, 2003). Booth, Alvazian, Demirgul-Kunt, and Maksimovic, (2002) argued that a firm that uses equity finance is able to make its performance better since there is direct control and because all the equity holders are the residual claimants, they have to ensure that resources are

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allocated efficiently to be able to maximise shareholders wealth. Hutchinson (1995) agrees with this, arguing that provided that earning power of firms exceed the cost of debt, financial leverage will have a positive effect in firm's return on equity. Some studies have however shown that debt has a negative effect on firm profitability. Fama and French (2000), were of the view that the use of excessive debt creates agency problems among shareholders and creditors resulting in negative relationship between leverage and firm performance. Similarly, Gleason, Mathur, L, and Mathur, I; (2000), supported a negative impact of leverage on the profitability of the firm. Myers and Majluf (1984) also supports a negative relationship claiming that asymmetric information increases the cost of equity resulting in decreased performance. Maina and Ishmail (2014), also reported a non-significant negative relationship between capital structure and performance and concluded that in general, capital structure choice has no significant impact on Kenyan listed firms.

3.DATA AND METHODOLOGY

The study employed descriptive survey. The study was based on listed companies operating in Kenya. Currently, there are 63 companies listed at the NSE (Mwai, 2014). A census, involving all the 49 firms listed in the NSE that were in operation between the year 2009 and 2013 was undertaken. Secondary data was obtained from NSE handbooks and published financial statements of the selected firms. T-test statistics, chi-square statistics and pearson correlation analysis were used since they all tend to show relationship between variables.

4.RESULTS

4.1.Capital Structure of Companies Listed at the NSE

This study utilized Debt Equity Ratio as a measure of capital structure for companies listed at the NSE. A comparison of Debt Equity ratio means for the five years was done to observe the trend. Appendix 1 shows the results on the mean and standard deviation of the years 2009 to 2013, as well as the average debt equity ratio for the five years. It was established that the year 2011 registered the highest Debt Equity ratio with a mean of 241.2% (SD = 234.4). This was followed closely by the year 2012 with a mean of 240.9% (SD = 218.4), then year 2013 with a mean of 237.6% (SD = 219.6). The year 2009 registered a mean of 221.4% (SD = 228.8) while year 2010 registered the lowest Debt Equity mean of 219.8% (SD = 212.7).

The study established that the mean Debt Equity ratio for the five years was 232.2% (214.7). These results indicate that the average capital structure of companies listed at the NSE had constantly declined between the years 2011 and 2013. The capital structure of the said companies had declined between the years 2009 and 2010 but greatly shot up the following year. Appendix 2 shows the average debt equity ratios for the years 2009 to 2013. The study established that 40.8% of the companies had a Debt Equity ratio of 200% and above same as that of less than 100% while 18.4% registered a Debt Equity ratio of 100 to 199%. This means that majority of the companies had a Debt Equity ratio of less than 200% since close to two thirds were in this category. It is worth noting that this

category of companies registered a Debt Equity ratio less than 232.2% which was the mean Debt Equity ratio.

The study sought to establish whether there were any differences in the capital structures among the 11 industries from which the companies listed in the NSE operated. For the purpose of this study, Debt Equity Ratio was categorized into three levels. Level 1 comprised Debt Equity ratio of less than 100%, level 2 comprised Debt Equity ratio of between 100 and 199% while level 3 consisted of Debt Equity ratios of 200% and above.

Appendix 3 shows industry and average debt equity ratio, a cross tabulation for the years 2009 to 2013. The study established that of the 6 companies in the Agriculture sector, the Debt Equity ratio of 5 was in Level 1 while the remaining one was in the third category. This means that most of the firms in the Agriculture sector had a low Debt Equity Ratio since a whopping 83.3% registered a Debt Equity ratio of less than 100%. There was only one firm in Automobiles and accessories industries and its Debt Equity ratio fell under level 2. All the 11 firms under banking industry had their Debt Equity ratio in the third category. This result means that all the firms in the banking industry had a Debt Equity ratio of above 199%.

The study established that out of the 7 firms in the commercial and services industry, 5 had a Debt Equity ratio of less than 100% while the remaining two had a Debt Equity ratio of more than 199%. This means that a high a majority of the firms in the commercial and services industry had a low Debt Equity ratio since close to three quarters registered a Debt Equity ratio of less than 100%. It was further established that out of the 5 firms in the construction and allied industry, 3 had a Debt Equity ratio of between 100 and 199% while 1 firm had a Debt Equity ratio of more than 199% same as less than 100%. This result means that majority of the firms in the construction and allied industry had a moderate Debt Equity ratio.

There were 4 firms in the energy and petroleum industry out of which 3 had a high Debt Equity ratio while the remaining one had a moderate Debt Equity ratio. This result means that majority of the firms in the energy and petroleum industry had a high Debt Equity ratio since three quarters of these firms registered so. Out of the three firms in the insurance industry, 1 registered a high Debt Equity ratio, another one a moderate and the remaining one a low Debt Equity ratio. Hence, the Debt Equity ratio for firms in the insurance industry was evenly distributed in the three levels of Debt Equity ratio. The study established that of the three firms in the investment industry, two had a low Debt Equity ratio while one had a moderate one. This means that none of the firms in the investment industry had a high Debt Equity ratio. There was only one firm in the investment services industry and it registered a low Debt Equity ratio.

It was further established that of the 7 firms in the manufacturing and allied industry, 4 registered a low Debt Equity ratio, 2 registered a moderate Debt Equity ratio while 1 had a high Debt Equity ratio. This result means that a majority of the firms in manufacturing and allied industry had a low Debt Equity ratio. There was only one firm in telecommunication and technology industry and it registered a low Debt Equity ratio. A chi -square statistics

was done to establish whether the differences in the Debt Equity ratio among firms in various industries was statistically significant.

Appendix 4 shows industry and debt equity ratio chi- square tests. The results indicate that there is a statistically significant relationship between industry the firm falls and Debt Equity ratio of a firm (chi-square with twenty degrees of freedom = 44.3, p = 0.001).

4.2.Capital Structure and Profitability

The study sought to establish the influence of capital structure on profitability of a firm. A T- test was done to test the null hypothesis; there is no significant influence of capital structure on profitability of a firm. Appendix 5 shows ROCE and debt equity ratio group statistics while appendix 6 shows ROCE and debt equity ratio independent samples test. The study established that the mean ROCE (Measuring profitability) for low geared companies was 12.45% (SD = 17.10) while that of firms that were high geared was 4.35% (SD = 7.42). This means that low geared firms registered much higher profitability compared to their counterparts that were high geared. The p-value is .003, implying that the difference in means is statistically significant at the .05 level of significance. Hence, the null hypothesis that there is no relationship between capital structure and profitability of a firm was rejected and thus the study concluded that capital structure had a significant negative influence on a firm's profitability.

 A chi square test was done to see whether the same findings could be arrived at. Appendix 7 shows ROCE and debt equity ratio chi- square tests. The relationship between capital structure and profitability is statistically significant (chi-square with four degrees of freedom = 11.89, p = 0.018). It shows that firms that are highly geared registered lower profits than firms that are highly geared. Hence, the null hypothesis was rejected since there is a significant relationship between capital structure and profitability.

Appendix 8 shows ROCE and debt equity ratio cross tabulation. A cross tabulation of profitability and capital structure indicated that majority of the firms that were low geared registered profitability in the higher brackets while high geared firms registered profitability in the lower brackets. This agrees with the results in the group statistics table about the means of the two groups of firms.

This result corresponds well with the finding of Booth et al (2002) who argued that a firm that uses equity finance is able to make its performance better since there is direct control and because all the equity holders are the residual claimants, they have to ensure that resources are allocated efficiently to be able to maximize shareholders wealth. Firms that are low geared are much more independent that their counterparts that are high geared. Such firms do not have to worry much about the interest on debts. Most decisions made in such firms revolve around maximizing on the shareholders wealth. Since this goal overshadows other goals, the result is high profits.

The findings of this study also agrees with the finding of Fama and French (2000), who ascertained that use of excessive debt creates agency problems among shareholders and creditors resulting in negative relationship between leverage and firm performance. Myers and Majluf (1984) also agrees with the study as they argued a negative relationship

between leverage and profitability claiming that asymmetric information increases the cost of equity resulting in decreased performance. Titman and Wessels (1988) also agrees with the findings of this study as they argued that firms with high profit levels, all things being equal, would maintain relatively lower debt levels since they can realize such funds from internal sources. However, Dessi and Robertson 2003 contradicts this as they argued that financial leverage affect positively on the expected performance, which is explained by the fact that low growth first attempts to depend on the borrowing for utilizing the expected growth opportunities and investing borrowed money at the profitable projects, thus increasing the firm performance

According to the tradeoff theory, more profitable companies should have more income to shield from taxes (Grossman & Hart, 1982) and thus it disagrees with the results of this study.) Trade off theory also agrees with MM's reviewed proposition which incorporated tax benefits as determinants of the capital structure of firms. They proposed that since interest is a tax-deductible expense, firms should use as much debt capital as possible in order to maximise their value (MM, 1963).

5.CONCLUSION

The study established that the mean ROCE (Measuring profitability) for low geared companies was 12.45% (SD = 17.10) while that of firms that were high geared was 4.35% (SD = 7.42). The p-value was .003, implying that the difference in means was statistically significant at the .05 level of significance. Hence, the null hypothesis was rejected and thus the study concluded that capital structure had a significant negative influence on a firm's profitability. This result corresponds well with the finding of Booth et al (2002) who noted that a firm that uses equity finance is able to make its performance better since there is direct control and because all the equity holders are the residual claimants, they have to ensure that resources are allocated efficiently to be able to maximize shareholders wealth.

REFERENCES

- Abor, J. 2004," The effect of capital structure on profitability: an empirical analysis of listed   firms in Ghana. University of Ghana, Legon, Ghana", The Journal of Risk Finance 6 (5), 438-445.

- Ahmadpour, A. and M.Yahyazadehfar, 2010, "Financial management and leverarge," Mazandaran University, No. 1.

- Berger, A. and C, Patti, 2002, "Capital structure and firm performance: a new approach to testing agency theory and application to the banking industry", vol 30, 1065- 1102.

- Booth, L.,V.Alvazian, A.Demirgul-Kunt, and V. Maksimovic, 2001." Capital structure in developing countries", Journal of Finance, vol. 56 (1), 87-130.

- Brealey, R.A. and S.C.Myers, 2003, "Principles of corporate finance". International edition, McGraw Hill, Boston, MA.

- Dessi,R. and D.Robertson, 2003, "Debt, incentives and performance: Evidence from UK panel Data," Economic Journal, vol 113, 903-919.

- Dimitris, M. and M.Psillaki, 2008, "Capital structure and firm efficiency." International Journal of the Economics of Business vol. 7 No. 3.

- Drobetz, W. and R.Fix, 2003, "What are the determinants of the capital structure?" Some Evidence for Switzerland working paper 88.

- Drobetz, W. and G.Wanzenried, 2006, "What determines the speed of adjustment to the target Capital structure?" Applied Financial Economics vol.16 No. 13, 941-958.

- Farma, E. and K.French, 2002, "Testing trade off and pecking order predictions about Frank, Dividends and debt," Review of Financial Studies, vol 15, 1-33.

- Gatsi, J.G. 2012. "Capital structure of Ghanaian banks: an evaluation of its impact on performance," IUP Journal of Bank Management vol. 11 (4), 86-99.

- Geczy, c.,B.Minton and C.Schrand, 1997, "why firms use currency derivatives," Journal of Finance vol. 52, 1323-1354.

- Ghalibafasl, H. 2005, "Financial management, concepts and applications." Pouran Publication, NO. 2.

- Ghosh, S. 2007, "Leverage, managerial monitoring and firm valuation: a simultaneous equation approach," research in economics, vol. 61, 84-98.

- Gleason, K. ,L. Mathur, and I.Mathur, 2000, "The inter relationship between culture, capital structure and performance, Evidence from European Retailers," Journal of Business Research, vol. 50, 185-191.

- Green, C.J., V.Murinde and J.Suppakitjarak 2002, "Corporate financial structure in India," Economic Research Paper No. 02/4. Centre for International, Financial and Economics Research, Department of Economics, Loughborough University, Loughborough.

- Grossman, S. and O.Hart, 1982, "Corporate financial structure and management incentives: The economics of information and uncertainty;" University of Chicago press- Chicago, 107-140.

- Hutchinson, R.W. 1995, "The capital structure and investment decisions of the small owner –managed firm: some exploratory issues", Small Business Economics, 7 (3), 231-239.

- Lalith, P. 1999, "The capital structure of Sri Lankan companies," Srilankan Journal of Management, vol. 4, Nos. 1 and 2, 18-30.

- Lemmon, M. andJ. Zender, 2010, "Debt capacity and tests of capital structure theories. "Journal of Financial and Quantitative Analysis 45 (5), 1161-1187.

- Maina, L. and M.Ishmail, 2014, "Capital structure and financial performance in Kenya: Evidence from firms listed at the Nairobi Securities Exchange." International Journal of Social Sciences and Entrepreneurship. Vol. 1, (11), 209-223.

- Miller, M. 1977, "Leverage", Journal of Finance, vol. 46, 479-488.

- Modigliani, F. and M.Miller, 1958, "The cost of capital corporation finance, and the theory of investment"   American economic review, vol. 63, 261-297.

- Modigliani, F. & M.Miller, 1963, "Corporate income taxes and the cost of capital: a correction," American Economic Review vol. 53, (3), 433-443.

- Mwai, E. 2014, Aug 12. "NSE Equities." Daily Nation .

- Myers, s. C. 1984, "The capital structure puzzle," Journal of Finance, vol.39, 575-592.
- Myers, S.C. 2001, "Capital structure," Journal of Economic Perspectives vol. 15, 81-102.
- Myers, S.C. and N.Majluf, 1984, "Corporate financing and investment decisions when firms have information that investors do not have, "Journal of Financial Economics, vol. 13, 187-221.

- NSE Handbook ,2013," Documented financial reports of all listed companies from 2009 to 2013."

- Pandey, I. 2009. "Financial management: capital structure planning and policy."

- Rajan, R; & L.Zingales, 1995. "What do we know about capital structure: some evidence from international data; "Journal of Finance, vol. 50. No. 5, 1421-1460.

- Ross, S., R.Westerfield, J.Jaffe, andR. Kakani, 2009, "Corporate finance," Tata McGraw.

- Shyam-Sunder, L. and S.C.Myers, 1999," Testing static trade-off against pecking order models of capital structure." journal of Financial Economics, vol. 5, 219-244.

- Smith, C.W. and R.M Stulz, 1985, "The determinants of firms hedging policies," Journal of Finanacial and Quantitative Analysis, vol. 20, 391-405.

- Titman, S; and R.Wessels, 1988," The determinants of capital of capital structure choice," Journal of Finance 43 (1), 1-19.

APPENDICES

Appendix 1: Capital Structure of Companies Listed at the NSE

	N	Mean (%)	Std. Deviation
Debt Equity Ratio: 2013	49	237.6	219.8
Debt Equity Ratio: 2012	49	240.9	218.4
Debt Equity Ratio: 2011	49	241.2	234.4
Debt Equity Ratio: 2010	49	219.8	212.7
Debt Equity Ratio: 2009	49	221.4	228.8
Average Debt Equity Ratio: 2009 to 2013	49	232.2	214.7

Appendix 2: Average Debt Equity Ratios (2009 to 2013)

Debt Equity Ratio	Frequency	Percent
Less than 100% (Low Geared)	20	40.8
100 to 199% (Moderately Geared)	9	18.4
200% and Above (High Geared)	20	40.8
Total	49	100.0

Appendix 3: Industry and Average Debt Equity Ratio (2009 to 2013) Cross Tabulation

		Average Debt Equity Ratio Category			
		1=Low	2=Moderate	3=High	Total
Agricultural	Count	5	0	1	6
	% within Industry	83.3%	.0%	16.7%	100.0%
Automobiles & accessories	Count	0	1	0	1
	% within Industry	.0%	100.0%	.0%	100.0%
Banking	Count	0	0	11	11
	% within Industry	.0%	.0%	100.0%	100.0%
Commercial & Services	Count	5	0	2	7
	% within Industry	71.4%	.0%	28.6%	100.0%
Construction & Allied	Count	1	3	1	5
	% within Industry	20.0%	60.0%	20.0%	100.0%
Energy & Petroleum	Count	0	1	3	4
	% within Industry	.0%	25.0%	75.0%	100.0%
Insurance	Count	1	1	1	3
	% within Industry	33.3%	33.3%	33.3%	100.0%
Investment	Count	2	1	0	3
	% within Industry	66.7%	33.3%	.0%	100.0%
Investment Services	Count	1	0	0	1
	% within Industry	100.0%	.0%	.0%	100.0%
Manufacturing & Allied	Count	4	2	1	7
	% within Industry	57.1%	28.6%	14.3%	100.0%
Telecommunication & Technology	Count	1	0	0	1
	% within Industry	100.0%	.0%	.0%	100.0%
	Count	20	9	20	49
	% within Industry	40.8%	18.4%	40.8%	100.0%

Appendix 4: Industry and Debt Equity Ratio Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	44.305	20	.001
Likelihood Ratio	50.615	20	.000
N of Valid Cases	49		

Appendix 5: ROCE and Debt Equity Ratio Group Statistics

	Average Debt Equity Category (2009 - 2013)	N	Mean	Std. Deviation	Std. Error Mean
Average ROCE (2009 to 2013)	1 (Low Geared)	29	12.45	17.10	3.18
	2 (High Geared)	20	4.35	7.42	1.66

Appendix 6: ROCE * Debt Equity Ratio Independent Samples Test

t-test for Equality of Means

		T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Average ROCE (2009 to 2013)	Equal variances assumed	1.99	47	0.05	8.10	4.08
	Equal variances not assumed	2.26	40.89	0.03	8.10	3.58

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Appendix 7: ROCE * Debt Equity Ratio Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11.887[a]	4	.018
Likelihood Ratio	14.147	4	.007
Linear-by-Linear Association	9.622	1	.002
N of Valid Cases	49		

Appendix 8: ROCE and Debt Equity Ratio Cross Tabulation

			Average Debt Equity Category (2009 - 2013)		
			1	2	Total
Average ROCE Category (2009 to 2013)	1	Count	3	8	11
		% within Average ROCE	27.3%	72.7%	100.0%
	2	Count	7	8	15
		% within Average ROCE	46.7%	53.3%	100.0%
	3	Count	9	3	12
		% within Average ROCE	75.0%	25.0%	100.0%
	4	Count	6	0	6
		% within Average ROCE	100.0%	.0%	100.0%
	5	Count	4	1	5
		% within Average ROCE	80.0%	20.0%	100.0%
Total		Count	29	20	49
		% within Average ROCE	59.2%	40.8%	100.0%

EFFECT OF BRAND EQUITY ON FIRMS' FINANCIAL PERFORMANCE IN CONSUMER GOODS INDUSTRIES

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Keywords	ABSTRACT
Consumer based brand equity, brand equity, brand financial performance, CBBE	This study aims to find empirical evidence linking consumer based brand equity (CBBE) with financial performance of firms. Aaker's CBBE approach is adopted and this equity is measured using a questionnaire developed from scales in existing literature. Differing from the extant literature, this study relates CBBE and firms' performance by taking a direct approach in measuring financial performance by utilizing independently audited financial statements. A face-to-face survey study encompassing 28 companies from a variety of consumer goods industries was carried out in Turkey arriving at 505 valid responses. Firms' financial performance was assessed using ten different performance indicators derived from financial statements submitted to Istanbul Stock Exchange. Following an exploratory factor analysis to reveal CBBE dimensions, a multiple regression analysis was carried out to test potential effects of CBBE factors on financial performance indicators. As an outcome of the analysis it has been seen that the components of CBBE positively affect most of the financial performance indicators to varying extents. Perceived quality dimension appears to be the major driver of financial performance followed by the composite factor encompassing brand awareness and brand association components.
JEL Classification M31, L25	

1. INTRODUCTION

The performance of a firm is intuitively expected to be improved as a result of a stronger brand and higher brand equity. However 'brand equity' is defined in many different ways and there is no generally accepted standard way of measuring it. In this study a consumer based perspective is adopted in examining the brand equity concept. Consumer based brand equity approaches adopt a cognitive psychological point of view in assessing the brand and the value created by it. Consumer based brand equity helps marketers in many ways as discussed in the following sections however it is a difficult task to relate it with financial performance. Consequently there are few empirical studies available in the existing literature that link consumer based brand equity and actual financial performance of firms creating a research gap in this important field.

Consumer based brand equity (CBBE) and its elements help customers in interpreting and processing information, create confidence in purchasing decisions and also enhance

customers' satisfaction (Aaker 1991; Davis 2000; Ambler 2003). The familiarity, high quality and reliability offered by brands decrease the uncertainty and risk involved in consumers' decision making process. Moreover, a more subjective aspect of value is also obtained from brands by the consumers. These personal benefits can materialize as self-esteem, self-actualization, enjoyment, sense of accomplishment, reference group belonging or status demonstration. This subjective value is related to brand associations and also related to Keller's (1993) brand equity component, the brand image. Consumer based brand equity help companies increasing the efficiency and effectiveness of their marketing programs, enjoy higher profit margins (Erdem et al. 2002; Bendixen et.al. 2004), offers good trade leverage abd helps in implementing brand extensions (Aaker & Keller 1990; Aaker 1991; Rangaswamy et al. 1993; Simon and Sullivan 1993). Additionally brand equity can also be used as a performance indicator for marketing activities in a company. Accountability and justification of marketing activities is an important and contemporary area of interest both for practitioners and academics in marketing (Christodoulides and de Chernatony 2010).

Shareholders and senior management are basically interested in increasing the financial performance of the firms. This can be done by creating sustainable competitive advantage among the competition. In terms of marketing management, one of the best tools available is the brand(s). This creates an increasing interest in branding especially in practitioners of the art. The ways to manage it properly to gain competitive advantage in the markets provides an important research area. This study was carried out to illustrate whether or not an observable link exists between consumer based brand equity, which can to a certain extent be managed by managers and the financial performance of firms, which is an absolute necessity that should be provided by the continuing operations of the firms. The type, strength and magnitude of possible relations between components of brand equity and financial performance indicators can lead to meaningful managerial implications.

The effect of CBBE on financial performance is partially analyzed by researchers, for instance Aaker and Jacobson (1994) found positive effect of quality perception and awareness on return on stocks and Mizik and Jacobson (2008) assesses the relationships between perceptual brand attributes differentiation, relevance, esteem, knowledge, energy) based on Y&R's Brand Asset Valuator (BAV) model and financial performance indicators (stock return, sales, operating income).

What distinguishes this study on brand equity from the others is the methodology of bringing together the CBBE and actual financial performances of a wide selection of brands from consumer industries.

2. THEORETICAL BACKGROUND

2.1. Brand and Brand Equity

Brand concept became popular in the 1980s and branding research continues to be an important field of marketing. The "brand" in the previous century was a concept attached to a product; however currently it is more an individual form that is separate from

(tangible/intangible) products. Without a brand, a product is just a commodity that only has functionality and is very easy to imitate or copy. With a brand, a product receives an identity, which is a promise that expectations of the customer will be met. Thus a brand is a strong tool and has a significant communicative and informative role both for the customers and the managers.

Brand equity which is in essence an added value, a benefit for firms and consumers that is created by the brand, has been the focus of both marketing professionals and academics since the early 1990s (Aaker, 1996; Keller, 1993). Different definitions for brand equity have been proposed so the methodologies developed for measuring brand equity are numerous. The brand equity approaches in the literature can be categorized in three different groups; financially oriented models, behaviorally oriented models and composite models (Zimmermann, 2001). The first wave of models that emerged during the 1980s were financially oriented and helped to assign a monetary value to brands, a necessity for increasing leverage in acquisitions and mergers that were becoming increasingly widespread. This financial brand equity is also named brand value as it attaches a monetary value to the brand. Nevertheless these models have not satisfied the needs of marketing professionals. Clearly defining brand equity from a consumer perspective, identifying its components and also providing related measures were critical features marketing professionals needed. Accordingly brand equity from a cognitive psychological point of view is adopted and CBBE concept and different assessment models that address marketers' needs were developed. The third wave of models, the commercial composite models are predominantly promoted by marketing and advertising agencies that take into account both CBBE and financial results. These composite models can put a price tag on brands and helps in taking into account the customer point of view so they became popular in application as well.

2.2. Consumer Based Brand Equity

Depending on the point of view of the researcher, consumer based brand equity (CBBE) can be defined diversely to incorporate distinct dimensions. For instance Farquhar (1989) defined brand equity as *'the value added by the brand to the product'*. Another common definition can be given as "*incremental utility or value added to a product by its brand name*" (Srivastava and Shocker, 1991). Some other popular definitions worth mentioning are: "*the difference between overall brand preference and multi-attributed preference based on objectively measured attribute levels*" by Park and Srinivasan (1994); "*incremental cash flows that accrue to the firm due to its investments in brands*" (Simon and Sullivan, 1993); *brand loyalty and image* (Shocker and Weitz, 1988); '*a set of brand assets and liabilities linked to a brand , its name and symbol, that add to or subtract from the value provided by a product or service to a firm and or to that firm's customers'* by Aaker (1991); and finally *'the differential effect of brand knowledge on consumer response to the marketing of the brand' (*Keller, 1993).

Among these various definitions one of the best-known (and one of the most cited studies) in CBBE is of David A. Aaker's. Aaker (1991) has adopted a multi-dimensional approach in knowing, distinguishing and differentiating products and brands that consists of mental assets and liabilities. Aaker's approach proposes a model that has five different

dimensions that affect the consumer based brand equity. These dimensions are; "brand loyalty", "brand awareness", "perceived quality", "brand associations" and "other brand assets". Many scholars used the CBBE approach and dimensions offered by Aaker in their studies such as Motameni and Shahrokhi (1998); Prasad and Dev (2000); Yoo and Donthu (2001), Pappu *et al*. (2005) and Buil *et al*. (2008). In this study, CBBE and its components are assessed and measured based on Aaker's popular approach.

2.2.1. Brand Awareness

Brand awareness is one of the major determinants of CBBE in existing literature (Aaker 1991, Kapferer 1991, Keller 1993, Agarwal and Rao 1996, Krishnan 1996, Mackay, 2001). Aaker (1991) identifies brand awareness similarly as the ability of a potential buyer to recognize or recall that a brand is a member of a certain category and offers a brand awareness pyramid that categorizes different awareness levels starting from bottom up; unaware of brand, brand recognition, brand recall and top of mind. Similar approaches are found elsewhere in literature and brand awareness is typically measured by recall or recognition (Rossiter and Percy 1987, Keller 1993). Recognition helps a brand to distinguish from others and provides an opportunity to be evaluated by consumers (Howard, 1998 p.30). Moreover awareness is a prerequisite that needs to be present in consumers' minds to develop brand associations (Washburn and Plank, 2002). Due to the high number of brands covered in this study, brand recognition is measured (instead of brand recall) to provide feasibility of application.

2.2.2. Brand Associations

Brand associations consist of all brand-related thoughts, feelings, perceptions, smells, colors, music, images, experiences, beliefs and attitudes (Kotler and Keller 2006, p. 188). Thus a brand association can be anything linked in memory to a brand (Aaker, 1991). Associations have been categorized in different ways by researchers but a dichotomous approach dividing them into product based associations and organization based associations is widespread (Aaker, 1991; Chen, 2001). Product specifications are the primary basis for product-related attribute associations and determine a consumer's fundamental understanding of what product means (Keller 1993). Product associations include functional attribute associations and non-functional associations (Chen, 2001). Functional attributes can be considered as tangible features of a branded product (Keller 1993, Hankinson and Cowking 1993, de Chernatony and McWilliam, 1989). While evaluating a brand, consumers link performance of functional attributes of a product to its brand (Lassar et al. 1995). This component of brand associations is named as the 'value dimension' by Aaker (1996), which is one of the three underlying factors of associations in his approach. Non-functional attributes on the other hand include all symbolic and intangible attributes (Aaker 1991, Keller 1993, Chen 2001) that meet consumers' needs for self-expression, self-esteem, social status indication (Keller 1993, Pitta and Katsanis 1995). Aaker (1996) considers this factor as the brand image dimension of associations. Organizational associations, the third dimension of associations named by Aaker (1996), are not related to any product but include corporate capability associations (related to company's ability and know-how in delivering its intended outputs), and corporate social responsibility associations (Chen, 2001).

2.2.3. Brand Loyalty

Brand loyalty is a core dimension of the brand equity model proposed by Aaker (1991, p. 39) and is defined as the attachment that a customer has to a brand. Loyalty can be observed as behavioral or attitudinal loyalty (Kumar and Shah, 2006). Behavioral loyalty is linked to consumer behavior in the marketplace that can be indicated by number of repeated purchases (Keller, 1998) or commitment to repeatedly buy the brand as a primary choice even if there are marketing efforts promoting other brands (Oliver, 1997). Attitudinal loyalty on the other hand focuses on consumers' preference of a brand, and refers to consumers' psychological attachment level and also attitudinal advocacy towards the brand (Chaudhuri & Holbrook, 2001). In this study an attitudinal loyalty approach is chosen and measurement is carried out via the scale utilized by Jones et. al. (2008) and Yoo and Donthu (2001) which was originally based on Beatty and Kahle's (1988) work.

2.2.4. Perceived Quality

Perceived quality is considered as a component of brand equity by various researchers (Kapferer 1991, Kamakura and Russell 1993, Martin and Brown 1991, Feldwick 1996) and it is one of the main components of the brand equity construct of Aaker (1991, 1996). Perceived quality can be defined as customers' judgment about a product's overall excellence or superiority that is different from objective quality (Zeithaml 1988, p.3). It is nearly impossible for consumers to objectively assess a products' quality, so they perceive a quality level that originate from numerous stimuli and information resources available to them. Consequently perceived quality is an intangible overall feeling about a brand and does not directly imply the actual quality of a product (Aaker, 1991 pp.85-86).

2.3. Benefits of Brand Equity

Brand equity and its constituents can be seen as important assets for brand owners as they provide various benefits to marketers (Davis, 2000; Ambler, 2003. The benefits of brand equity for the firms has been highlighted in the literature as follows; easier differentiation and positioning, increased efficiency and effectiveness of marketing and advertising programs, enjoying higher prices hence higher profit margins (Erdem et. al., 2002; Bendixen et. al., 2004), good trade leverage over suppliers and distributors, ability to implement brand extensions and create competitive advantage (Aaker & Keller, 1990; Aaker, 1991; Bottomley and Doyle 1996; Rangaswamy et al., 1993; Simon & Sullivan, 1993; Smith & Park, 1992). It was also seen in different contexts that higher brand equity lead to higher purchase intentions (Chang & Liu, 2009; Cobb-Walgren et al., 1995; Washburn & Plank, 2002; Senthilnathan and Tharmi 2012). Keller and Lehmann (2003) indicated in their study on brand value chain that investments in marketing programs advertising can alter the consumers' brand awareness, associations, and attitudes towards the product/brands. These in turn lead to attachment and finally an intention to purchase. It is expected that in the long run, these positive transformations can lead to improved firm performance (Okazaki and Taylor, 2008).

All these aforementioned benefits of consumer based brand equity are expected to affect the success of the companies. Increasing performance and positioning itself in a better place should help the companies in improving their financial performance. This

performance can be calculated using various indicators that focus on different aspects of the financial performance. Higher awareness and loyalty should provide a larger consumer base and better pricing than competitors. Higher perceived quality paves the way for premium pricing, which should lead to higher margins and better profitability. Higher awareness, positive associations and higher quality perceptions should help companies in finding the financial resources they require more easily, hence lead to higher financial leverage.

2.4. Hypotheses

In line with the expected relations between consumer based brand equity components and the financial performance indicators of the firms the following hypotheses are developed:

$H1_i$: Higher awareness (i.e. F1) is positively related to higher financial performance indicators for firms.

$H2_i$: Better brand associations are positively related to higher financial performance indicators for firms.

$H3_i$: Higher brand loyalty is positively related to higher financial performance indicators for firms.

$H4_i$: Higher perceived quality is positively related to higher financial performance indicators for firms.

The term "i" is used to indicate each distinct financial indicator.

3. DATA AND METHODOLOGY

In this study consumer based brand equity's effects on actual financial performance of the firms is evaluated by using multiple regression analysis between CBBE components and financial performance indicators. The main hypothesis proposed can be summarized as follows:

Hn_i: n^{th} consumer based brand equity component have an effect on i^{th} financial performance indicator.

Each relationship between CBBE components and financial performance indicators were tested using hypotheses derived from this major hypothesis using the model presented as Equation-1. This equation summarizes the model employed in the study to test the hypotheses in its simplest form.

$$Y_{ij} = \beta_0 + \beta_1 X_{1J} + ... + \beta_4 X_{1J}^{2} + ... + \beta_6 X_3^{2} + \beta_7 X_1.X_2.. + \beta_m X_n.X_{n-1} + \varepsilon_j \ (1)$$

Y_{ij} : Financial performance indicator
$X_{1...n}$: CBBE component
β_m : CBBE regression coefficients
ε_n : Error term
i =1,2...n ; j =1,2...n

where *i* = financial indicator; *j* = firm

The data collected through a survey study (via a questionnaire) was used to measure CBBE dimensions, namely; perceived quality, brand awareness, brand associations, brand loyalty. The financial performance of the firms in the study is assessed using indicators derived through their annual financial statements announced to the Borsa Istanbul (Istanbul Stock Exchange; ISE).

The measurement scale that was used in this study is based mainly on Yoo and Donthu's (2001) study, which was founded upon Aaker's (1991) approach. Yoo and Donthu's (2001) scale seems to have strengths in the context of this study due to different characteristics, such as:

- • using samples from multiple cultures and validating the scale culturally;
- • ease of use and parsimony;
- • applicability in different industries;
- • ability to measure brand equity on (individual) consumer level.

The questions in the original study were translated into the local language (Turkish) and were revised by three local marketing professors and the authors to ensure accurate meaning. Some of the questions that were linguistically and culturally not suitable were dropped and new ones are added after academic expert assessments.

To conclude, a total of 13 questions were prepared to measure the related dimensions of brand equity. Five point Likert scale ranging from "Totally Disagree" to "Totally Agree" is used in measuring CBBE constructs.

The study was constructed to be as comprehensive as possible industry-wise, and be able to reflect the overall consumer market in Turkey. Consequently firms selected for this study were from diverse industries that cater to consumer needs. Ten companies are retailers from various fields, five from food and beverages, four from building materials and remaining are from other consumer goods industries.

To obtain accurate, reliable and comparable financial data, only companies that are publicly traded in the Borsa Istanbul (ISE) thus audited by certified auditing firms are considered in this study. Moreover only firms that are headquartered in Turkey and active in the consumer markets are included in the study to be able to collect reliable CBBE data. Multinational firms were excluded as strong CBBE from global operations may create halo effects and lead to misleading results when relating CBBE to financial performance.

Furthermore, a basic level of awareness among the populace, being an umbrella brand, and being outside of the financial services sector were selected as filtering criteria. Banking and financial services sectors are not included in this study due to their unique balance sheets and unique financial performance indicators, which cannot be compared to firms from other industries. Taking into account applicability issues and available resources, a total of 28 firms were chosen for the study.

3.1. Sampling and Survey Administration

Seven different versions of the questionnaire were developed and the respondents were asked to evaluate the items for four distinct brands in each version. To discourage direct comparisons between brand and possible halo effects, brands in each version were selected from distinct industries. Due to the repetitive process of answering the same questions for different brands, face to face interview was chosen as the implementation method of the questionnaire to overcome concerns over reliability of answers.

The survey was carried out in Istanbul, the commercial hub of Turkey by a professional (accredited) marketing research firm. Taking into account the wide range of firms in the study that cater to different needs and wants, a wide demographic distribution was targeted via quota sampling. Sample size was selected as 500 and adults of age 18 and up were interviewed. A total of 672 questionnaires were collected out of which 505 complete questionnaires were usable for analysis. Each individual in the sample answered questions for four different brands consequently the effective sample size is 2,020 (505x4) as 2,020 data sets were used in the analysis.

Basic demographics of the sample that are provided in Table 1 reflect a reasonably balanced distribution in terms of gender and age.

Table 1: Basic Sample Demographics

Demographic (Percent of Total Sample)					
Age		Education		Gender	
18-24	24.00%	Elementary School Grad.	36.80%	Men	52.10%
25-34	32.50%	Mid. & High School Grad.	51.50%	Women	47.90%
35-49	33.70%	University Grad. & above	11.70%		
50+	9.90%				

3.2. Financial Performance Indicators

Financial performance of the firms may be observed directly from their financial statements or indirectly by obtaining views of the managers on firm's financial performance. In the latter method, the indicators that reflect the extent of the fulfillment of financial goals, such as sales levels, market shares in target markets and profitability are assessed (Moorman and Rust, 1999). In this study a direct approach in assessing financial performance is adopted and financial performance is appraised using financial data published by the firms. Financial performance indicators that can reveal different aspects of financial performance of a company such as profitability, efficiency, size of operations, financial credibility were chosen and calculated using publicly available income statements and balance sheets of the firms (through ISE). The indicators for measuring the financial performance may be listed as follows: Return on share price (ROS), Firm Value/Book Value (FVBV), Price/Sales ratio (PS), Net profit margin (NPM), EBITDA/Net Sales Ratio (EBNS), Return on Assets (ROA), Operational Income (OI), Current Ratio (CR), Financial Leverage

Ratio (FLR) Net Sales (NS), Market Value (MV). These well-known indicators provide the ability to compare firms in different industries.

4. ANALYSIS & RESULTS

In the analysis stage we aimed to test Equation-1 using ordinary least squares regression however the correlation between CBBE items were high (condition index >30). Consequently an explanatory factor analysis was implemented to obtain brand equity components. Through this factor analysis, individual questions were combined into meaningful factors that can be considered as the major components of CBBE.

Three distinct (significant) factors, which can be seen in Table 2, have appeared as the outcome of the factor analysis. VARIMAX rotation method is used in the analysis so that the factors remain uncorrelated with one another. Almost 73% of the total variance is represented by the three factors. Bartlett's sphericity test for the three orthogonal factors was significant at 99.9% (p < 0.001) level with KMO score of 0.94 and chi square of 17145 (with 91 degrees of freedom).

Table 2: Factor analysis rotated component matrix

Item (Summarized)	F1	F2	F3	Communal.
Degree of Brand Knowledge	0.613			0.422
Recognize the brand easily amongst competitors	0.723			0.641
Remember the brands' logo/symbol easily	0.845			0.779
Remember the brand properties easily	0.853			0.808
Visualize the brand easily	0.836			0.781
Has high quality products/services			0.809	0.764
Offers superior quality compared to others			0.765	0.773
Offers functional / practical products	0.727		0.774	0.727
Reliable, doesn't create problem			0.767	0.732
Brand will be my first choice		0.586	0.544	0.731
Don't buy another brand if the product I search is available in this brand		0.690	0.413	0.741
Buy this brand even if it more expensive than others		0.833		0.733
Buy this brand even the properties of another brand is the same with it		0.800		0.748
Buy the brand even if there is a brand as good as it		0.817		0.768
Variance explained by each factor	25.3%	23.9%	23.6%	

Factor-1 (F1): The components of the first factor (F1) consist of items that relate to the brand awareness and brand associations. In this study we were able to use only major indicator questions for each brand equity component to measure CBBE dimensions.

Consequently the limited number of questions aimed to reveal associations have not been able to establish this antecedent as an independent factor. As was seen in another similar study by Yoo and Donthu (2001) brand awareness and brand associations appear as one dimension in this study. Consequently this factor incorporates the consumers' awareness, degree of knowledge of a brand and the ability to remember the logo and properties of a brand. We named this factor 'Knowledge' factor for ease of commenting.

Factor-2 (F2): The components of the second factor relate to consumers' loyalty to the brand. Consequently this dimension is named 'Loyalty'.

Factor-3 (F3): The third factor in the study incorporates perceived overall functionality, quality, and reliability of the brands and their products. Consequently this third dimension is named 'Perceived Quality'.

4.1. Effect of CBBE Factors on Financial Performance Indicators

Each of the financial performance indicators underwent a multiple regression analysis with the CBBE factors. The relationships were tested using the Equation 2, which is a modified version of Equation 1 that incorporates the results of factor analysis.

$$Y_{ij} = \beta_0 + \beta_1 F_{1j} + \beta_2 F_{2j} + \beta_3 F_{3j} + \beta_4 F_{1j}.F_{2j} + \beta_5 F_{1j}.F_{3j} + \beta_6 F_{2j}.F_{3j} + \beta_7 F_{1j}^2 + \beta_8 F_{2j}^2 + \beta_9 F_{3j}^2 + \varepsilon_j \ (2)$$

Y_{ij} : Financial performance indicator
$F_{1...3}$: CBBE factors
$\beta_{1...9}$: CBBE factor scores
ε_j : Error term
i =1,2...n
j =1,2...n
where i = financial indicator; j = firm

Squares of the factors and their products (multiplications with each other) are also added to the multiple regression analysis to detect possible non-linear relationships.

After carrying out the multiple regression analysis 11 times for each financial performance indicator, statistically significant relations were identified. All of the relations between CBBE and financial indicators are presented in Appendix 1.

To better illustrate the analysis and interpretation processes an example is provided below. In this example effects of the three CBBE factors on EBITDA / Net Sales financial performance indicator are presented. Overall findings of the study are presented after this (example) analysis.

The relationship between CBBE factors and the financial performance indicator EBITDA / Net Sales (EBNS) is revealed in Table 3 and equation (3). Wald test is used and insignificant coefficients are dropped from the equation. As can be seen, EBNS ratio is affected from all CBBE factors.

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Table 3: Multiple Regression between brand equity factors and EBITDA / Net Sales

Coefficients	B	Std.error	Std. coeff. beta	t-value	t-probability
Constant	0.005	0.023		0.235	0.817
F3	0.251	0.068	1.003	3.661	0.001
F1xF1	0.294	0.075	0.640	3.916	0.001
F2XF3	0.374	0.118	0.852	3.182	0.004

R^2 = 0.395; F= 6.87; probability = 0.002

$$EBITDA \ / NS \ = c + 1.103 \ F_3 + 0.640 \ F_1^2 + 0.852 \ F_2 F_3 \ (3)$$

When we interpret the equation we see that as brand knowledge (F1) increases EBITDA/NS ratio also increases exponentially.

Loyalty's (F2) effect on EBITDA/NS changes with the sign of Perceived Quality (F3). If a firm has low perceived quality, F2 acts negatively on this financial performance indicator. On the contrary, if a firm has high perceived quality, F2 acts positively on EBITDA/NS.

$$\frac{\partial EBITDA \ / NS}{\partial F_3} = +1.103 + 0.852 F_2 \ (4)$$

In all cases tested in the study, improving F3 (Perceived Quality) led to an (exponential) increase in EBNS (thus better financial performance). Dependence on F2 affects not the sign but magnitude of the relationship between F3 and EBNS ratio, as can be seen in the Equation 4.

Increasing the perceived quality for firms with low loyalty leads to a low magnitude positive effect on EBITDA/NS performance indicator. On the other hand the firms with high loyalty enjoy a high magnitude positive effect on this performance indicator when the perceived quality is improved.

As indicated before, all of the findings of this study illustrating the relationships between three CBBE factors and all the financial performance indicators are presented in Appendix 1.

As an outcome of the study in general we can say that there are statistically significant relationships between CBBE factors and all financial performance indicators excluding financial leverage ratio. F1 has a significant positive effect on 8 of the 11 financial performance indicators analyzed. Seven of these effects are exponential, one is linear. F2 on the other hand affects only about half of the financial performance indicators tested. Finally F3 affects most of the financial performance indicators except ROS (Return on Share) and financial leverage ratio. F3 affects financial performance indicators more strongly on average than the other two factors.

In addition, it is seen that the way CBBE factors act on financial performance indicators change at certain threshold levels of brand equity factor scores.

To better understand the CBBE factors' effect on different aspects of financial performance, the indicators are grouped and the findings for each group are presented separately below.

Results of the regression analysis between the CBBE factors and the financial indicators that are grouped in overall financial performance (ROS, FV/BV, P/S) reveal that improvement of all three factors leads to better overall financial performance. When the strength of the effects was analyzed, F1 appeared to be the most important factor followed by F3 and lastly F2.

Indicators in profitability group (NPM, EBITDA/NS, ROA) can be defined as profitability and also the ability to use sources effectively. After analyzing the relationships between the CBBE factors and indicators in this group, F3 (Perceived Quality) is seen as the factor that affects the highest number of indicators. F1 (Knowledge) and F2 (Loyalty) dimensions can be considered equally important.

When the financial indicators grouped under the size of operations (Net Sales, Market Value, Operational Income) are analyzed the effects of F1 and F3 come forth as the dominant factors. The secondary factor that affects this group of financial performance indicators surfaces as F2.

Current ratio and financial leverage ratio were used to analyze the financial strength of the company. The relationship between the CBBE factors and financial leverage ratio was insignificant. On the other hand current ratio was affected negatively by F2 and F3. This can be considered natural because as a company's brand equity increases it can utilize more financial resources (open more credit lines from banks etc.) and can carry more debt, thus a higher current ratio.

5.CONCLUSIONS

As for managerial implications, perceived quality appears to be the primary dimension of CBBE that should be improved upon for enhancing financial performance. The second factor that should be taken into account is the knowledge factor that appeared as the composite of brand awareness and brand association components. The least important factor among the three is seen as brand loyalty.

When we interpret the analysis results on a factor basis we can see that awareness and associations composite factor is the most important factor that affects the size of operations. Higher awareness among the general populace provides a larger potential market for the firm. On the other hand, knowledge factor did not affect the current ratio of the firm, which leads us to the conclusion that awareness among the populace does not offer any advantages in terms of debt carrying or paying ability. Profitability was mainly related to the perceived quality factor. Brands perceived as offering higher quality products can benefit from premium pricing and higher profit margins, which were confirmed in this analysis.

From a managerial perspective it should be easier to improve loyalty after reaching a particular awareness level and a certain degree of quality level is established among

consumers. The improvements in the perceived quality of a brand provide a solid base on which to develop. Well-known firms with high awareness but low perceived quality (products) may have trouble performing well financially.

Another interesting finding is the need to improve the CBBE to a certain degree to be able to reap the financial benefits. Until a threshold point, improvements in CBBE factors may not lead to improved financials. This can be explained as the resources needed to improve these dimensions are quite significant until the brand acquires a certain degree of awareness or an acceptable level of perceived quality among customers. As firms establish and reach above these thresholds in brand equity dimensions, they finally start to reap the financial benefits and their financial performance indicators begin to improve quickly.

6.LIMITATIONS & FUTURE RESEARCH AVENUES

The study carried out has some limitations in different dimensions. For instance, firms from a wide variety of sectors are included in the study to be representative of consumer markets, however firms from banking and financial services sectors that have unique financial statements and financial performance indicators were omitted from the study. Due to the unavailability of reliable and comparable financial data in addition to the potential bias of their global marketing and promotional activities on the consumer based study, the multinational firms were also omitted. Accordingly it was not possible to select firms from all major consumer sectors that comprise the consumer economy of Turkey. Extending the findings directly to businesses from different sectors with different dynamics may lead to unreliable conclusions.

The field study was carried out only once. Answers to the questions in the survey may be affected positively or negatively from contemporary developments and messages in the media regarding the brands covered in the study. Also promotional and communicational activities originating from the brands' may have affected the results.

In the analysis brand awareness and brand associations converged into one dimension as experienced by Yoo and Donthu (2001), which the proposed model is primarily based on. These two constructs are conceptually defined as separate concepts in the literature (Aaker 1991; Keller 1993). Consumers may be aware of a brand however they may not know it well or have experienced it enough, or are not interested in it to develop a set of associations with it. To be able to measure brand associations for different industries, a large set of possible brand associations, a significant number of questions should be used in the questionnaire which was not feasible in this study.

The scope of the study in terms of the number of the brands and industries covered may be increased. The brands that have different target consumer segments and different financial structures should be analyzed to be able to generalize findings of this study.

Increasing the geographical reach and then carrying out the survey again will definitely help in verifying and increasing the reliability of the findings. Researchers are encouraged to repeat the study in different regions and countries.

The repetition of this study in different time frames will help improve the representativeness of the study and to decrease influences of external effects mentioned in the limitations sections.

The moderating effects of demographics or brand/category experience were not tested in this paper. These and similar factors may affect relations between CBBE constructs and financial performance. For instance, in terms of brand loyalty, if a consumer has no or limited experience with a category or brand he or she may not be able to develop any loyalty towards it.

Acknowledgements

REFERENCES

- Aaker, D.A., (1991), Managing Brand Equity, The Free Press New York, NY.

- Aaker, D.A., (1996), "Measuring Brand Equity Across Markets Products", *California Management Review* 38(3), 102-120.

- Aaker, D.A. and Keller, K.L. (1990), "Consumer evaluations of brand extensions", *Journal of Marketing* 54(1), 27–41.

- Aaker, D.A. and Jacobson, R. (1994), "The Financial Information Content of Perceived Quality", *Journal of Marketing Research* 31(2), 191-201

- Agarwal, M.K., Rao, V.R. (1996), "An Empirical Comparison of Consumer-Based Measures of Brand Equity", *Marketing Letters* 7(3), 237-247

- Ambler, T. (2003) Marketing and the Bottom Line: Creating the Measures of Success. Financial Times/Prentice Hall, London, UK.

- Bendixen, M., Bukasa, K.A., Abratt R. (2004), "Brand equity in the business-to-business market" *Industrial Marketing Management* 33(5), 371– 380

- Biel, A.L., (1992). "How Brand Image Drives Brand Equity", *Journal of Advertising Research* 32(6), 6-12.

- Bottomley, P.A. and Doyle, J.R. (1996), "The formation of attitudes towards brand extensions: testing and generalising Aaker and Keller's model", *International Journal of Research in Marketing* 13(4), 365–377.

- Buil, I., de Chernatony, L. and Martinez, E. (2008), "A cross-national validation of the consumer based brand equity scale", *Journal of Product and Brand Management* 17(6), 384–392.

- Chaudhuri, A. and Holbrook, M. B. (2001), "The chain of effects from brand trust and brand affect to brand performance: The role of brand loyalty", *Journal of Marketing* 65(2), 81-93.

- Chang, H. H. and Liu, Y. M. (2009). The Impact of Brand Equity on Brand Preference and Purchase Intentions in the Service Industries. *The Service Industries Journal* 29(12), 1687.

- Chen, A.C. (2001), "Using free association to examine the relationship between the characteristics of brand associations and brand equity", *Journal of Product & Brand Management* 10(7), 439-451.

- Christodoulides, G. and de Chernatony L. (2010), "Consumer-based brand equity conceptualisation and measurement", *International Journal of Market Research* 52(1), 43-66

- Cobb-Walgren, C.J., Ruble, C.A. & Donthu N. (1995), "Brand equity, brand preference, and purchase intent", *Journal of Advertising* 24(3), 25–40.

- Davis, S.M. (2000), Brand Asset Management. Jossey-Bass, San Francisco, CA.

- de Chernatony, L. and McWilliam G. (1989), "The varying nature of brands as asset", *International Journal of Advertising* 8(4), 339-349.

- Dodds, W.B., Monroe, K.B., Grewal, D. (1991), "Effects of price, brand, and store information on buyers' product evaluation", *Journal of Marketing Research* 28, 307-319.

- Erdem, T., Swait, J. and Louviere, J. (2002), "The impact of brand credibility on consumer price sensitivity", *International Journal of Research in Marketing* 19(1), 1–19.

- Farquhar, P.H., (1989). "Managing Brand Equity", *Journal of Marketing Research*, September, 24-33.

- Farquhar, P.H., Han J.Y and Ijiri Y. (1991), "Recognizing and Measuring Brand Assets", Marketing Science Institute, Cambridge, MA pp. 91-119.

- Feldwick, P. (1995), "What is brand equity anyway, and how do you measure it?" *Journal of the Market Research Society* 38(2), 85-104.

- Hankinson, G. A. and Cowking, P. (1993), Branding in Action, McGraw-Hill, Maidenhead.

- Howard, Steven, (1998), Corporate Image Management, Butterworth-Heinemann, Singapore p.30.

- Hsin Hsin, C., & Ya Ming, L. (2009), "The impact of brand equity on brand preference and purchase intentions in the service industries", *The Service Industries Journal* 29(12), 1687-1706.

- Jones, T. and Taylor, S.F. (2007), "The conceptual domain of service loyalty: how many dimensions?", *Journal of Services Marketing*, 21(1), 36-51

- Jones, Tim, Shirley F. Taylor, and Harvir S. Bansal (2008), "Commitment to a Friend, a Service Provider, or aService Company—Are They Distinctions Worth Making?", *Journal of the Academy of Marketing Science* 36(4), 473–487.

- Kapferer, J.N., (1992), Strategic Brand Management, The Free Press, New York, NY.

- Kamakura WA, Russell GJ., (1993), "Measuring brand value with scanner data", *International Journal of Research in Marketing* 10(1), 9-21.

- Keller, K.L., (1993), Conceptualizing, Measuring, and Managing Customer-Based Brand Equity*, Journal of Marketing*, 57(1), 1-22.

- Keller, K.L., and Lehmann, D. (2003) "How do brands create value?" *Marketing Management*, (May–June) 27–31

- Kotler, P. and Keller K.L., (2006), Marketing Management, 12th edition, Prentice Hall, NJ.

- Krishnan, H.S., (1996), "Characteristics of memory associations: a consumer based brand equity Perspective", *International Journal of Research in Marketing*, 13(4), 389-405.

- Kumar V., Shah D., Venkatesan R. (2006), "Managing Retailer Profitability-One Customer at a Time*", Journal of Retailing* 82(4), 277-294.

- Kumar, V. and Reinartz, W. (2006), Customer Relationship Management: A Databased Approach. John Wiley, New York, NY.

- Lassar, W., Mittal, B. and Sharma, A., (1995), "Measuring Customer Based Brand Equity", *Journal of Consumer Marketing* 12(4), 11-19.

- Mackay, M.M. (2001), "Evaluation of brand equity measures: further empirical results", *The Journal of Product and Brand Management* 10(1), 38-51.

- Martin, G.S. and Brown, T.J.(1991), "In Search of Brand Equity: The Conceptualization and Operationalization of the Brand Impression Construct", Winter Educator's Conference Proceedings, Terry L. Childers et al. eds. Chicago: American Marketing Association, 431-438.

- Mizik, N. and Jacobson, R. (2008), "The financial value impact of perceptual brand attributes", *Journal of Marketing Research*, 45(1), 15–32.

- Moorman, C., & Rust, R. T. (1999). The role of marketing. *Journal of Marketing*, 63, 180–197.

- Motameni, R. and Shahrokhi, M., (1998), "Brand Equity Valuation A Global Perspective", *Journal of Product and Brand Management*, 7(4), 275-290.

- Okazaki, S. and Taylor, S. (2008) "What is SMS advertising and why do multinationals adopt it? Answers from an empirical study in European markets" *Journal of Business Research* 61(1), 4-12

- Oliver, R.L., (1997), Satisfaction: A Behavioral Perspective on the Consumer, New York, McGraw-Hill.

- Pappu, R., Quester, P.G. and Cooksey, R.W. (2005), "Consumer-based brand equity: improving the measurement – empirical evidence". *Journal of Product and Brand Management*, 14(3), 143–154.

- Park, C.S. and Srinivasan, V., (1994), "A Survey Based Method for Measuring and Understanding Brand Equity", *Journal of Marketing Research* 31, 271-288.

- Pitta, D.A. and Katsanis, L.P. (1995), "Understanding brand equity for successful brand extension", *Journal of Consumer Marketing* 12(4), 51-64

- Prasad, K. and Dev, C.S., (2000), Managing Hotel Brand Equity: A Customer-centric Framework for Assessing Performance, *Cornell Hotel and Restaurant Administration Quarterly*, Vol. June, pp. 22-31.

- Rangaswamy, A., Burke, R.R. and Oliva, T.A. (1993), Brand equity and the extendibility of brand names. *International Journal of Research in Marketing* 10(1), 61–75.

- Rossiter, J.R. and Percy, L. (1987), Advertising and Promotion Management, New York, NY: McGraw Hill.

- Senthilnathan, S., & Tharmi, U. (2012), "The Relationship of Brand Equity to Purchase Intention". *IUP Journal of Marketing Management*, 11(2, pp. 7-26.

- Shocker, A.D., and Weitz, B., (1988), "A perspective on brand equity principles and issues", Leuthesser L, editor. Report No: 88-104. Cambridge, Marketing Science Institute, 2-4.

- Smith, D.C. and Park, W. (1992), "The Effect of Brand Extensions on Market Share and Advertising Efficiency. *Journal of Marketing Research* 29, 296-313.

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- Simon, C.J., and Sullivan, M.W., (1993), "The Measurement and Determinants of Brand Equity a Financial Approach", *Marketing Science* 12(1), 28-52.

- Srinivasan, V. (1979), "Network models for estimating brand specific effects in multi-attribute marketing models", *Management Science*, 25(1), 11-25.

- Srivastava, R. and Shocker, A.D. (1991), "Brand equity: a perspective on its meaning and measurement", *Report Number 91-124*. Cambridge, Marketing Science Institute.

- Yoo, B., Donthu, N., Lee, S. (2000), "An examination of selected marketing mix elements and brand equity", *Journal of the Academy of Marketing Science*, Vol. 28(2), 195–211.

- Yoo, B., and Donthu, N. (2001), "Developing and validating a multidimensional consumer-based brand equity scale", *Journal of Business Research* 52(1), 1-14.

- Washburn, J.H. and Plank R.E. (2002), "Measuring brand equity: an evaluation of a consumer-based brand equity scale", *Journal of Marketing Theory and Practice*, 10(1), 46-62.

- Zeithaml, V.A. (1988), "Consumer perceptions of Price, Quality, Value: a means end model and synthesis of evidence", *Journal of Marketing* 52, 2-22.

- Zimmermann, R. (2001), Brand Equity Excellence Volume 1: Brand Equity Review, BBDO Group, Düsseldorf.

APPENDIX 1: EFFECT OF BRAND EQUITY FACTORS ON THE FINANCIAL PERFORMANCE INDICATORS

Financial Indicator	F1	F2	F3	F1^2	F2^2	F3^2	F1F2	F1F3	F2F3	R^2 Adj.	F	sig.
ROS				0.406**						0.133	5.145	0.032**
Firm/Book Value	0.329*	0.527**	-1.101***				0.709***	-0.878***	-1.17***	0.504	5.571	0.001**
Price/Sales			0.571**	0.583***		0.581**				0.227	3.650	0.027
Net Profit Margin			0.004***			0.040**				0.235	5.141	0.013**
EBITDA/Net Sales			1.003***	0.640***					0.852***	0.395	6.868	0.002**
Return On Assets			0.333*							0.077	3.248	0.083*
Current Ratio		-0.578***			0.714***	-1.477***			0.698*	0.297	3.855	0.015
Oper. Income			1.102***	0.591***					0.932***	0.406	7.139	0.001***
Net Sales	0.699***		0.273**	0.416***						0.624	15.951	0.000***
Market Value	0.578***			0.318**				0.362**		0.393	6.820	0.002***

* Significant at 10 per cent level; ** Significant at 5 per cent level; *** Significant at 1 per cent level.

THE HEDGING EFFECTIVENESS AND THE STABILITY OF THE OPTIMAL HEDGE RATIOS: EVIDENCE FOR THE ISTANBUL STOCK EXCHANGE 30 CONTRACT

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Keywords	ABSTRACT
Futures, Hedging Effectives, Beta Stability, Istanbul Stock Exchange, TurkDEX	In this paper we investigate ex ante hedging effectiveness of the Istanbul Stock Exchange 30 (ISE 30) stock index futures contract covering the period January 2007-December 2014. An optimal hedge ratio is typically calculated by regressing historical spot prices, spot price changes or spot returns on futures prices, futures price changes or returns. The slope of the regression is then used as the optimal hedge ratio. However, no guidelines are provided on what return interval and estimation period should be chosen for the calculation of returns. The empirical research has shown that hedge ratio estimates are not invariant to the return measurement interval or the estimation period. This study finds that although the daily returns for the estimation of hedge ratio provides the best ex-post performance, ex-ante tests favor hedge ratios calculated with longer return intervals and estimation periods. While one should expect greater precision for longer estimation periods, results of this study do not provide satisfactory evidence in favor of this argument.
JEL Classification G11, G13, G14, G15, G32	

1. INTRODUCTION

Stock index derivatives have gained phenomenal success within a short space of time. Low transaction costs in the derivatives markets are compared favorably with the higher costs in the cash market. Further, the cash market may have illiquidities in the availability of the stocks. Index derivatives, on the other hand, are typically cash settled and hence have no liquidity issues. Moreover, although stock exchanges impose restrictions on short selling of stocks, short positions are easily available in the futures markets. For the reasons stated above, stock index futures are ideal vehicles to hedge equity portfolios against market risk. The potential offered by futures in extending risk management capabilities attracted many investors and it has generated strong academic interest soon after their introduction. As the determination of the correct hedge ratio is of paramount importance for portfolio managers for the hedge construction and its effectiveness, the hedging performance of the futures contracts has become one of the most widely studied issues in research on derivatives. In the mean- mean-variance framework, the optimal hedge ratio, the value that minimizes the variance of the return on the hedged portfolio, is found by dividing covariance between the returns on spot and futures by the variance of the futures return. Finding the optimal hedge ratio is just a matter of finding the best possible time

series model to describe the return data. Although more recent studies adopt generalized autoregressive conditional heteroscedasticity (GARCH) framework for finding optimal hedge ratios as GARCH techniques handle time varying nature of the financial data well, probably the most widely used method by practitioners for this task is to calculate the hedge ratio by regressing historical spot prices, spot price changes or spot returns on futures prices, futures price changes or returns. A stock index futures contract on an index that is assumed to track market movements well is chosen and the hedge ratio is estimated by the ordinary least squares (OLS) regression model of the rate of returns of the portfolio on those of the futures. The coefficient of the futures return, or its beta is then used as the optimal hedge ratio. However, the choice on the return interval and estimation period is critical for the calculation of returns. Typically, daily returns measured over short time periods are used for the estimation of the hedge ratios. If returns are independent and identically distributed, betas estimated using daily returns should not be substantially different than those estimated by weekly, bi-weekly or monthly returns. Moreover, the choice of the estimation period should not have an effect of a portfolio's beta as long as the structural characteristics of the firms in the portfolio do not change over time. As the empirical research has shown that beta estimates are not invariant to the return measurement interval or the estimation period, it is important to know how the choice on return interval and estimation period affects beta estimates. Although there is a vast financial literature on this subject using developed market data, compared to the number studies on developed markets, the number of studies covering emerging market data is still limited. Especially the number of studies employing Turkish data is scant.

Within this context, we aim to contribute to the financial literature in two ways. First, we provide new empirical evidence on this subject from an important emerging market by analyzing the hedging effectives of Turkish stock index futures on an actual diversified portfolio of Turkish stocks. Second, we utilize a methodology that has never been applied to Turkish data before. The rest of the paper is organized as follows. Section Two provides a brief review of the literature on hedging effectiveness. Data and methodology is presented in Section Three. Section Four summarizes the results of the study. Section Five concludes and provides suggestions for future work.

2.LITERATURE REVIEW

The issue of the stability of betas was first studied in the context of Capital Asset Pricing Model (CAPM) research. It is clear that as the number of returns used in a sample increases, the standard error of the estimated beta should decrease. Therefore, lengthening the estimation period should improve the precision of these estimates. Whether or not this improved precision results in increased stability in the estimated betas is an empirical question. Blume (1971) is one of the first studies that investigate the impact of the length of the estimation period on the estimation of the betas. The results of the study show that portfolio betas are highly stable for longer-terms. Individual security betas, on the other hand, are not stable. Baesel (1974) and Altman, et al. (1974), both varied the estimation period and concluded that stability of individual beta coefficients increases as the length of the estimation period increases. Roenfeldt (1978) concluded that forecasting betas based on a four-year previous period are more reliable

for subsequent four-, three-, and two-year periods than for only the next year. The abovementioned studies find that betas are stable if the initial and subsequent estimation periods are of the same length. In practice, however, betas estimated using longer estimation periods are used for shorter subsequent periods. Betas estimated from lengthy samples should be more prone to the effects of the structural changes in firms/firms in the portfolios. Although a lengthy estimation period should provide a more precise beta estimate, estimated betas might fail to reflect many recent structural changes. A large number of empirical studies provide evidence that betas change over time. Fabozzi and Francis (1978) study is one of the first studies that demonstrate that beta coefficients calculated by the OLS regressions move randomly through time. Many other studies studies across a range of stock markets (Sunder, 1980; Bos and Newbold, 1984; Collins, et al. 1987; Faff et al. 1992; Brooks et al. 1992, 1994) provided evidence that betas are not stationary. As the GARCH techniques handle time varying nature of the financial data well, many recent studies employed these techniques to estimate conditional time dependent betas.

CAPM research also revealed that returns measured over short periods of time have more information. However, these returns, especially daily returns, suffer from non-synchronous trading problem which results in serial correlation in returns (Kim, 1999). One possible remedy to this problem is to increase the return measurement interval. However, serial correlation, although weakened, is still a problem for longer period returns. Moreover, for stocks/portfolios riskier (less risky) than the market estimates of beta increases (decreases) as the return interval increases (Cohen et al., 1985, Handa et al., 1989). With the introduction of stock index futures a vast literature on hedging effectiveness has quickly developed. As the estimation procedure for the optimal hedge ratios are very similar those used for the estimation of CAPM betas, this line of research also considered the issues of the stability of the hedge ratios and the impact of the return interval on the effectiveness of the optimal hedge ratios. Figlewski (1984), Holmes (1996), Howard and D'Antoniou (1987), Lindahl (1992) and Butterwoth and Holmes (2001) are among the many studies on finding methods for calculating optimal hedge ratios and analyzing the performance of the alternative methods.

Most of the studies on hedging effectiveness concluded that hedge ratios estimated by GARCH techniques should be preferred to OLS based ratios. However, most of the time the improvement provided by the unconditional variances are usually minimal (Lien, 1996, 2004; Moosa, 2003; Bowman, 2004). Majority of the studies on hedging effectives focus on developed markets. Research on emerging markets is relatively limited. Sim and Zurbruegg (2001) study on South Korean index futures, Floros and Vougas (2006) study on Greek stock index futures, Bhaduri and Durai (2008) on Indian stock index futures and Kavussanos and Visvikis (2008) stdy on Greek stock index futures are examples of studies that use emerging market data. Although Turkish Derivatives Market has now become one of the most successful derivatives markets, to our best knowledge, there are only two studies on hedging effectiveness of Turkish futures (Çinko and Avcı, 2010, and Olgun and Yetkiner, 2011). There is also another study by Er and Hushmat (2012), however, their focus is not directly on testing the hedging effectiveness of the futures. They use a CAPM

based hedge ratio and the cost-of-carry relation to test performance of technical rules generated from spot prices and then applied on futures contracts.

The review of the literature shows that majority studies on hedging effectiveness are on developed market data. Moreover, most of these studies employ GARCH techniques to estimate the hedge ratios. To our best knowledge, there is no study on the ex-ante hedging performance of the Turkish stock index futures analyzing the effectiveness of OLS based hedge ratios estimated from samples of varying size and returns calculated over different intervals. This is what this paper seeks to contribute the literature.

3.DATA AND METHODOLOGY

In this paper, empirical analysis is based on daily, weekly, bi-weekly and monthly returns from January 2007 to December 31, 2014 on an equally weighted portfolio constructed from the following 15 Istanbul Stock Exchange (ISE) stocks: Adana Çimento, Akbank, Alarko Holding, Anadolu Sigorta, Aygaz, Ereğli Demir Çelik, Keretivaş, Frigo Pak Gıda, İzmir Demir Çelik, Migros, Martı Otel İşletmeleri, Turkish Airlines, Turkcell, Pınar Süt and Zorlu Energy. All stocks continuously traded on the market during the sample period. In order to construct a well-diversified portfolio, we included stocks from almost all sectors. Most of these stocks are high capitalization and low risk stocks. Their products and services are well known by the Turkish public. The consideration here is to minimize the effects of thin trading.

Initial portfolio value is set to TRY 1,500,000. As the portfolio is equally weighted, initial investment on each stock is TRY 100,000. The number of each stock to be bought, N_i, is then calculated by dividing TRY 100,000 by the closing price of the stock on the first trading day of January 2007. Closing prices were obtained from Istanbul Stock Exchange. Starting from the second trading day of January 2007, the portfolio value is recalculated by summing the product of each stocks new closing price, P_{it}, and N_i. In order to maintain equal weights, we change N_i's only when there is a stock split, bonus shares (stock dividend) or a cash dividend payment. In case of a stock split or stock dividend on share i, the N_i is multiplied by (1 + split or stock dividend ratio). In case of the cash dividend payments, the cash obtained is allocated to the shares equally and all N_i's are increased by the amount invested in each share.

ISE-30 futures daily data was also obtained from Istanbul Stock Exchange. Like many of the emerging markets, futures contracts (and other derivatives) are relatively new for Turkey. Turkish Derivatives Market (TurkDEX) was established in 2001 and started to trade in 2005. The futures contracts did not attract market interest during the course of first six months. During this period there were trading days during which no transactions on the contracts took place. However, from November 2005 onwards the trading volume increased dramatically. TurkDEX ranked 30th derivatives exchange with 62,474,464

contracts traded in 2012[1]. The contract specifications of the ISE-30 futures are summarized in Table 1:

Table 1: ISE 30 Index Futures Contracts

Underlying Asset	ISE 30 Index
Contract Size	Value calculated by dividing the index value by 1000 and multplying the quotient by TRY 100 (ISE 100 index /1000)*100
Minimum Price Tick	Price tick is 0.025 which corresponds to TRY 2.5
Contract Months	February, April, June, August, December (Contracts with two different expiration months to nearest to the current month shall be traded concurrently)
Settlement Method	Cash Settement
Expiry date	Last business day of each contract month. In case domestic markets are closed for half day due to an official holiday, expiry date shall be the preceding business day.
Last Trading Day	Last business day of each contract month. In case domestic markets are closed for half day due to an official holiday, expiry date shall be the preceding business day.

The continuous futures price series is created from the nearest contract from five business days from its inception until five business day before its maturity.

Portfolio and futures returns are calculated using the following formula:

$$R_t = \frac{P_t - P_{t-1}}{P_{t-1}} \tag{1.a}$$

$$R_{ft} = \frac{F_t - F_{t-1}}{F_{t-1}} \tag{1.b}$$

Where R_t is the return on portfolio for period t, P_t and P_{t-1} are the portfolio values on the periods t and $t-1$. F_t and F_{t-1} are the futures prices on the periods t and $t-1$, respectively, and R_{ft} is the return on the futures contract for period t. The sample yielded 1757 daily, 353 weekly, 176 bi-weekly, 84 monthly returns for the 2007-2013 period (in-sample period), and 251 daily returns for 2014 period (out-of-sample period for ex-ante tests). In order to avoid the day of the week anomalies, Wednesday prices are used for the calculation of the weekly and bi-weekly returns.

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[1] Source : Futures Industry Association Annual Volume Survey

For each return interval, seven estimation periods ranging from one year to seven years are examined. One year estimation period covers data only from 2013 observations. Two year period covers data from the beginning of 2012 to the end of 2013; three year period covers data from the beginning of 2011 to the end of 2013. The remaining estimation periods are created in a similar fashion.

For each sample, the following OLS regression model is used to estimate the hedge ratios (betas):

$$R_t = \alpha + \beta R_{ft} + \epsilon_t \tag{2}$$

where R_t is the return on portfolio in period t, R_{ft} is the ISE-30 futures return in period t, α is the intercept term, β is the hedge ratio, and ϵ_t is the error in period t.

Following Daves et.al. (2000), the standard error of the estimated beta, S_β, is defined as follows:

$$S_\beta = \frac{1}{\sqrt{n-1}} \times \frac{S_\epsilon}{S_f} \tag{3}$$

where, S_ϵ is the standard deviation of the estimated errors in equation (2), S_f is the standard deviation of the futures returns, and n is the number of observations in each sample. This measure is used to assess the precision of the estimated betas.

As mentioned in previous section, lengthening the estimation period should improve the precision of the beta estimates. However, if a portfolio constituents' fundamental structure changes over the estimation period, estimated betas might become biased. Therefore, further tests are needed to assess the stability of betas over estimation periods. To test the stability of betas, asset betas are first estimated by using only 2013 daily return data. Then, one additional year of return data is added to the estimation period and the following equation is estimated:

$$R_t = \alpha + \gamma_{2012} D_{2012} + \beta R_{ft} + \Delta_{2012} D_{2012} R_{ft} + \epsilon_t \tag{4}$$

Where

R_t	the return on portfolio in period t
R_{ft}	the ISE-30 futures return in period t
α	the intercept for portfolio in 2013
β	the beta for portfolio in 2013
ϵ_t	the error for the period t
D_{2012}	1 for observations in 2012, 0 otherwise
γ_{2012}	the intercept for portfolio in 2012
Δ_{2012}	the shift in beta by adding the 2012 returns to the estimation period.

If Δ_{2012} is significantly different from zero, then the beta for 2012-2013 is significantly different from the beta of 2013. Hence it is not stable over 2012-2013 estimation period.

If there is shift in the beta in the 2012-2013 estimation period, an additional test is performed by adding 2011 return data to the estimation period using the following equation:

$$R_t = \alpha + \gamma_{2012}D_{2012} + \gamma_{2011}D_{2011} + \beta R_{ft} + \Delta_{2011}D_{2011}R_{ft} + \epsilon_t \qquad \textbf{(5)}$$

Now β is the beta for the 2011-2013 period and Δ_{2011} is the shift in beta by adding the 2011 returns to the estimation period.

Again if Δ_{2011} is significantly different from zero, returns from the previous year are added to the sample and an equation similar to equation 5 is estimated. The procedure continues until 2007 returns are added to the estimation period.

Hedge ratios calculated are then used examine their ex-ante performance in 2014 period for one month, three month, six month and one year hedge periods. The number of futures contracts to be shorted, N_F, is calculated by the following formula:

$$N_F = \beta \frac{Portfolio\ Value\ at\ the\ Beginning\ of\ the\ Hedge}{ISE30\ Futures\ \times Index\ Multiplier} \qquad \textbf{(6)}$$

To evaluate the effectiveness of the hedge, we use the following ratio suggested for this purpose by Butterworth and Holmes (2001):

$$\frac{\sigma_U^2 - \sigma_H^2}{\sigma_U^2} \qquad \textbf{(7)}$$

Where, σ_U^2 is the variance of the unhedged portfolio, and σ_H^2. This ratio shows the degree of risk reduction provided by hedging with index futures. The higher the ratio, the more effective the hedge is.

4.RESULTS

4.1. Results on the Effect of Return Interval and Estimation Period

Using daily, weekly, bi-weekly and monthly returns and estimation periods ranging from one year to seven years, betas are estimated. The beta and S_β are calculated for each return interval and estimation period. This procedure yielded 28 betas. Table 2 summarizes the results.

Table 2: The Effect of Return Interval and Estimation Period

Estimation Period for Beta	Return Interval							
	Daily		Weekly		Bi-weekly		Monthly	
	Beta	S_β	Beta	S_β	Beta	S_β	Beta	S_β
2013	0.6788	0.0365	0.6415	0.0859	0.6938	0.0858	0.5028	0.1736
2012-2013	0.6051	0.0238	0.5069	.0663	0.5838	0.0648	0.3005	0.1072
2011-2013	0.6382	0.0225	0.5022	0.0564	0.5004	0.0691	0.3920	0.0874
2010-2013	0.6729	0.0232	0.5333	0.0583	0.5367	0.0734	0.4205	0.1257
2009-2013	0.6390	0.0197	0.5496	0.0458	0.5483	0.0630	0.4894	0.1043
2008-2013	0.6516	0.0159	0.5790	0.0365	0.5689	0.0467	0.5291	0.0826
2007-2013	0.6473	0.0142	0.5927	0.0319	0.5892	0.0418	0.5392	0.0698

Samples with daily returns provided the smallest S_β. As the return interval increases, the standard error also increases. Based on these findings, it can be concluded that shorter return intervals are associated with smaller standard errors. However, the standard error of the beta does not always decrease as the sample size increases. Although for all return intervals the smallest standard error is provided with the longest estimation period, in certain cases it increases as the estimation period increases. Another interesting finding is that betas tend to decrease as the estimation period increases and they tend to increase as the return interval decreases. As expected, all of the betas are less than unity.

4.2. Stability Tests

The first regression to test stability provided a significant shift coefficient. Therefore, we added one more year to the estimation period and reran the regression. This time shift coefficient turned out to be insignificant. This result is in line with the tests of effect of the return interval and estimation period. When 2012 and 2013 daily returns are used for the estimation of the hedge ratio, a smaller standard error than the standard error of the hedge ratio, calculated only from 2013 daily returns, resulted. Results on the stability of beta suggest that in estimating beta, samples with more than two years of return data result in biased estimates. Betas estimated with longer estimation periods fail to capture structural changes that shift betas of the shares in the portfolio.

4.3. Ex-ante Tests

The results of the ex-ante tests are summarized in Tables 3. Contrary to the results of the ex-post tests, better variance reduction is provided with increased return interval. In general, as the return interval increases so does the hedge effectiveness. Betas estimated using monthly returns provide the best hedge efficiency over all hedge periods. As was expected, as the hedge period increases, the efficiency of the hedge decreases. However, this reduction is less marked with betas estimated from monthly returns.

Table 3: Ex-Ante performance of the hedge ratios

Betas calculated from daily returns					
Estimation Period	Beta	Hedge Period			
		One Month	Three Month	Six Month	One Year
2013	0.6788	0.5725	0.3975	0.3230	0.2881
2012-2013	0.6051	0.6252	0.4986	0.4464	0.3797
2011-2013	0.6382	0.6169	0.4532	0.3961	0.3429
2010-2013	0.6729	0.5844	0.3977	0.3344	0.2967
2009-2013	0.6390	0.6161	0.4519	0.3947	0.3419
2008-2013	0.6516	0.6051	0.4327	0.3734	0.3260
2007-2013	0.6473	0.6089	0.4393	0.3807	0.3315
Betas calculated from weekly returns					
Estimation Period	Beta	Hedge Period			
		One Month	Three Month	Six Month	One Year
2013	0.6415	0.6100	0.4572	0.3906	0.3388
2012-2013	0.5069	0.6703	0.5907	0.5484	0.4501
2011-2013	0.5022	0.6829	0.5935	0.5515	0.4520
2010-2013	0.5333	0.6764	0.5723	0.5279	0.4368
2009-2013	0.5496	0.6709	0.5585	0.5127	0.4266
2008-2013	0.5790	0.6576	0.5294	0.4805	0.4041
2007-2013	0.5927	0.6498	0.5138	0.4632	0.3918
Betas calculated from bi-weekly returns					
Estimation Period	Beta	Hedge Period			
		One Month	Three Month	Six Month	One Year
2013	0.6938	0.5553	0.3711	0.2930	0.2653
2012-2013	0.5838	0.6394	0.5240	0.4746	0.3999
2011-2013	0.5004	0.6832	0.5946	0.5527	0.4528
2010-2013	0.5367	0.6754	0.5696	0.5249	0.4348
2009-2013	0.5483	0.6714	0.5597	0.5140	0.4274
2008-2013	0.5689	0.6626	0.5400	0.4922	0.4124
2007-2013	0.5892	0.6519	0.5179	0.4678	0.3951
Betas calculated from monthly returns					
Estimation Period	Beta	Hedge Period			
		One Month	Three Month	Six Month	One Year
2013	0.5028	0.6822	0.5987	0.5511	0.4518
2012-2013	0.3005	0.5953	0.5715	0.5378	0.4211
2011-2013	0.3920	0.6650	0.6161	0.5795	0.4621
2010-2013	0.4205	0.6758	0.6182	0.5805	0.4659
2009-2013	0.4894	0.6841	0.6004	0.5592	0.4567
2008-2013	0.5291	0.6776	0.5755	0.5315	0.4392
2007-2013	0.5392	0.6746	0.5675	0.5226	0.4333

Results on the stability of beta suggest that in estimating beta, samples with more than two years of return data result in biased estimates. According to the stability test results betas estimated with longer estimation periods fail to capture structural changes that shift portfolio constituents' betas. The results on the ex-ante hedge effectiveness suggest just the opposite of ex-post stability results. The ex-ante hedging results show that the hedge effectiveness is positively related with the estimation period, it generally increases as the estimation period increases. However, an estimation period longer than five years results in decreased hedge efficiency for betas estimated from all return intervals. These results show the importance of employing ex-ante tests on studies on hedge effectiveness. The results suggest that drawing conclusions based ex-post results might be misleading.

5.CONCLUSION

This study analyses the hedging effectives of ISE-30 Stock Index Futures on an actual diversified portfolio of 15 stocks for the period between January 2007 and December 2014. The study focusses on the selection of the appropriate return interval and the estimation period that should be employed in the estimation of optimal hedge ratio. We calculate the hedge ratios and their standard errors using daily, weekly, bi-weekly and month returns with one to seven year samples for the period between January 2007 and December 2013. We then apply the calculated beta for the implementation of hedge strategies in 2014.

Ex-post results suggest that employing daily returns for the estimation of betas results in the greatest precision. The results suggest the same for estimation period. Ex-post stability tests suggest that daily returns from a two year estimation period should be used for the calculation of hedge ratios. However, ex-ante performance of betas calculated with high return intervals and small estimation periods are disappointing. Ex-ante tests show that highest reduction in variance through hedge is provided by hedge ratios calculated on long return intervals. Moreover, the efficiency increases as the length of the estimation period increases. However, estimation periods longer than five years do not provide good hedge efficiency.

To sum, it can be concluded that both the return measurement interval and the length of the estimation period have an important impact on beta estimation. According to the results of this study using monthly returns provides the best hedge efficiency. Hedge efficiency decreases as the hedge period decreases. Therefore, it can be concluded that the best hedging effectiveness can be achieved if hedge portfolios are re-balanced monthly with (rolling) betas that are re-estimated every month with new return data.

It should be noted that the results should be interpreted with care given the limitations of this study. We use only one portfolio for testing the hedge effectiveness and have only one year hold-out period. In future work we intend to use many portfolios with differing risk levels and the hedge efficiency will be tested on a variety of hold-out periods. In future work we also intend to analyse these effects through factor models and compare the results with results of GARCH based models. The effects of thin trading, which are a common feature of emerging markets, will also be taken into consideration in future work using more sophisticated methods than the one we use in this study.

REFERENCES

- Altman, E. I., B. Jacquillat and M. Levasseur, 1974, "Comparative Analysis of Risk Measures: France and the United States," *Journal of Finance* 29, 1495-1511.
- Baesel, J. B.,1974, "On the Assesment of Risk: Some Further Considerations," *The Journal of Finance* 29, 1491–1494.
- Bhaduri, S.N. and S.R.S. Durai, 2008, "Optimal hedge ratio and hedging effectiveness of stock index futures: evidence from India," *Macroeconomics and Finance in Emerging Market Economies* 1(1), 121-134.
- Blume, M. E., 1971, "On the Assessment of Risk," *Journal of Finance*, 1-10.
- Blume, M., 1975, "Betas and Their Regression Tendencies," *Journal of Finance* 30, 785-795.
- Bos, T. and Newbold, P., 1984, "An empirical investigation of the possibility of stochastic systematic risk in the market model," *Journal of Business*, 7, 35–41.
- Brooks, R.D., Faff, R.W. and Lee, J.H.H., 1992, "The form of time variation of systematic risk: Some Australian evidence," *Applied Financial Economics*, 2, 191–98.
- Bowman, C., 2004, "Cross-hedging effectiveness in emerging markets experiencing structural change" Working paper, Australia National University. Retrieved from www.ssrn.com
- Brooks, R.D., R.W. Faff, and J.H.H. Lee,1994, "Beta stability and portfolio formation," *Pacific Basin Finance Journal* 2, 463–79.
- Butterworth, D. and P. Holmes, 2001, "The hedging effectiveness of stock index futures: evidence for the FTSE-100 and FTSE-Mid250 indexes traded in the UK," *Applied Financial Economics* 11(1), 57-68.
- Cohen, K., S. Maier, R. Schwartz, and D. Witcomb, 1985, The Microstructure of Securities Markets. Prentice Hall.
- Collins, D.W., J. Ledolter, and J. Rayburn, 1987, "Some further evidence on the stochastic properties of systematic risk," *Journal of Business* 60, 425–48.
- Çinko, E. and M. Avcı, 2010, "The hedge period length and the hedging effectiveness: An application on TURKDEX-ISE 30 Index Futures Contracts," *Journal of Yaşar University* 5(18), 3081-3090.
- Daves, P. R., M. C. Ehrhardt , and R. A. Kunkel, 2000, "Estimating systematic risk: the choice of return interval and estimation period," *Journal of Financial and Strategic Decisions* 13(1), 7-13.
- Er, H., & A. Hushmat, 2012, "The Impact of the Leverage Provided by the Futures on the Performance of Technical Indicators: Evidence from Turkey," *International Journal of Economics and Finance Studies* 4(2), .
- Faff, R.W. and R.D. Brooks, 1996, "Further evidence on the relationship between beta stability and the length of the length of estimation period," *Advances in Investment Analysis and Portfolio Management*
- Figlewski, S., 1984, "Hedging performance and basis risk in stock index futures," *The Journal of Finance* 39(3), 657-669.
- Floros, C., and D. Vougas, 2006, "Hedging effectiveness in Greek stock index futures market, 1999-2001." *International Research Journal of Finance and*

Economics 5, 7-18.

- Frank J. F, and J.C. Francis, 1978, "Beta as a Random Coefficient," *Journal of Financial and Quantitative Analysis* 13, 101-116.
- Handa, P., Kothari, S. P., & Wasley, C. (1989). The relation between the return interval and betas: Implications for the size effect. Journal of Financial Economics, 23(1), 79-100.
- Holmes, P., 1996, "Stock index futures hedging: hedge ratio estimation, duration effects, expiration effects and hedge ratio stability," *Journal of Business Finance & Accounting* 23(1), 63-77.
- Howard, C. T., & , L. J. D'Antonio, 1984, "A risk-return measure of hedging effectiveness," *Journal of Financial and Quantitative Analysis* 19(01), 101-112.
- Kavussanos, M.G., and I.D. Visvikis, 2008, "Hedging effectiveness of the Athens stock index futures contracts." *European Journal of Finance*, 14(3), 243-270.
- Kim, D., 1999, "Sensitivity of Systematic Risk Estimates to the Return Measurement Interval under Serial Correlation," *Review of Quantitative Finance and Accounting* 12, 49–64
- Lien, D., 1996, "The effect of the cointegration relationship on futures hedging: A note," *Journal of Futures Markets* 16, 773–780.
- Lindahl, M., 1992, "Minimum variance hedge ratios for stock index futures: duration and expiration effects" *Journal of Futures Markets* 12(1), 33-53.
- Moosa, I., 2003, "The sensitivity of optimal hedge ratio to model specification." *Financial Letters* 1, 15–20.
- Olgun, O., & I. H. Yetkiner, 2011, "Determination of Optimal Hedging Strategy for Index Futures: Evidence from Turkey," *Emerging Markets Finance and Trade* 47(6), 68-79.
- Roenfeldt, R., 1978, "Further Evidence on the Stationarity of Beta Coefficients," *Journal of Financial and Quantitative Analysis* March, 11-21.
- Sim, A.B., and R. Zurbruegg, 2001, "Dynamic hedging effectiveness in South Korean index futures and the impact of the Asian financial crisis," *Asia-Pacific Financial Markets* 8(3), 237-258.
- Sunder, S., 1980, "Stationarity of market risk: Random coefficients tests for individual stocks." *Journal of Finance*, 883-896.

EFFECTS OF OPERATIONAL COSTS ON LENDING INTEREST RATES OF COMMERCIAL BANKS IN KENYA

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Keywords	ABSTRACT
Operational cost, lending interest rates.	The high interest rates charged by many commercial banks have attracted the attention of policy makers throughout the world. The commercial banks lending interest rates is a key indicator of the marginal cost of short-term and long-term external funding in an economy and provides useful information about developments in the average cost of borrowing. Various theories have been put across to address this issue. This paper examines the relationship between operational cost and lending interest rates of commercial banks (CBs) in Kenya. The study employed a descriptive research design. A study on a sample size of 34 commercial banks was undertaken. Secondary data was collected for the year 2013 from financial statements of the commercial banks and the NSE handbook. Primary data was collected by use of semi-structured questionnaires. The findings of the study indicated that the operational costs had a significant positive influence on the lending interest rates of CBs in Kenya.
JEL Classification C1,G3,M1	

1. INTRODUCTION

Due to competition in the banking industry in the global market, financial institutions are necessitated to offer attractive lending rates to their customers in order to survive (Salloum & Hayek, 2012). Interest rates offered by Commercial Banks (CBs) globally and locally attract customers to purchase products and services of financial institutions.
Lending rate is the interest charged by banks when they advance loans to its customers.
This interest is usually set in a way that the cost incurred by the banks will be covered and a profit made by the banks when customers service their facilities. In economics, this interest is the payment for the services of the capital provided, Williamson (1996). In other words, interest is the price of hiring capital. Lending is considered one of the major functions of CBs. Banks play an important role in the mobilization and allocation of resources in an economy by accepting deposits and converting them into loans and investment. This role of financial intermediation of CBs supports businesses to grow and also increase their profitability through the loans advanced to customers. Operational costs and lending interest rates have been studied worldwide with different results. A study by Gambacorta

(2004) on factors explaining cross-sectional differences in bank interest rates of Italian banks found out that interest rates on short term lending of liquid and well capitalised banks react less to monetary policy shocks. With respect to operating cost and credit risk, an increase in the cost of financial intermediation leads to higher lending rates as banks attempt to recoup the costs. These include costs incurred in assessing the risk profile of borrowers, monitoring of the various projects for which loans have been advanced and reaching out to as many people and geographical areas as possible through expansion of branch network. A study by Margarida (2000) found out that the net interest margin reacts positively to operating cost and hence changing market condition would have an impact on the market interest rate which would have a direct impact on profit.

Assets in Sub-Saharan Africa revealed that bad assets are caused by adverse economic shocks coupled with high cost of capital and low interest margins (Fofack, 2005). A study by Goldstein & Turner (1996) found out that "the accumulation of non-performing assets is generally attributable to a number of factors, including economic downturns and macroeconomic volatility, terms of trade deterioration, high interest rate, cost of assets, insider lending and moral hazard''. A study by Mucugu (2012) on determinants of interest rates in the Microfinance Institutions in Kenya established that administrative cost, profitability, cost of funds and loan loss determined the interest rates charged by the microfinance institutions in Kenya.

The rest of the paper is organized as follows: In the next section we discuss the detailed literature on the relationship between operational cost and lending interest rates. In section three, we outline the methodology adopted for the study. Finally, we draw our conclusions from the study in section four.

2. LITERATURE REVIEW

2.1.Theoretical Framework

2.1.1.Transaction Cost Theory

Transaction cost theory has proven an essential framework for decisions on the vertical boundaries of a firm. Transaction costs are the costs associated to the division of work. Williamson (2000), indicated that transaction occurs when a good or service is transferred across a technologically separable interfaces. One stage of activity terminates and another one begins. Variables that describe a transaction are, among others, the specificity, the uncertainty, and the frequency of the transaction, whether an asset or a service is only or much more valuable in the context of a specific transaction. In the following, human capital specificity (the workout managers), the asset specificity (on loan and real estate level) and the site specificity (the location of the collateral) are taken into account, Reddy (2002). Goods and services are of a high specificity, if the supply is limited and unique and if there is no comparability. A threat to breach the contract can be seen as untrustworthy, since there is no alternative. A lock-in of one transaction party leads to a hold up. Low specificity exists, if there is a range of homogeneous services or goods and supply is secured. Since goods or services are comparable and competition exists, there is no pricing problem. Furthermore, high competition may imply motivation and quality (Yousaiken 2001).

2.1.2.Liquidity Preference Theory

The general idea of the liquidity preference theory was developed by J.M Keynes`s within a simplified model in which there is only two types of financial assets money, the liquid and the bonds with no maturity, the illiquid assets .According to him, an increased preference for liquidity in the model is equivalent to increased demand for money and therefore demand for money increases wherever more people think interest rates are likely to rise than believes they are likely to fall (Howel & Bain,2008). According to this theory, investors will always prefer short term securities to long term securities. To encourage them hold long term bonds, long term securities should yield higher interests than short term bonds. Therefore, the yield curve will always be upward sloping. A hypothesis about the term structure of interest rates (the relationship between interest rates and term to maturity) holding that investors demand a premium for bearing interest rate risk. The extent of the premium increases with term to maturity but at a decreasing rate. The two reasons behind the decreasing rate of increase are that duration, a measure of a bond's price sensitivity to interest rate changes, increases at a decreasing rate with term to maturity and that long term interest rates are typically less volatile than short term interest rates. (Tennant, 2006).

Lending institutions determine the interest rate in the credit market by marking up the central bank's base rate, and then supply credit at this rate to those borrowers whom they consider to be creditworthy. CBs are therefore price makers and quantity takers, within the limits given by creditworthiness. Again, the willingness of firms and households to pay the rate of interest set by banks in the credit market is a necessary, but not a sufficient condition to obtain credit, and there will always be some sort of 'credit rationing' for those who are unable to provide required collateral (Wolfson 1996). The commercial banks' mark-up on the base rate is determined by their risk and liquidity considerations, and also by the degree of competition in the commercial banking sector. In this approach, liquidity preference determines the structure of interest rates, and not the level of interest rates. The commercial banks' liquidity preference is a determinant of the mark-up and hence the spread between the base rate and the market rate of interest. If liquidity preference and risk considerations of private banks and, hence, their markups remain constant, the central bank's interest rate setting in the base money market also determines the market rate of interest in the credit market (Smithin 2003). Under these conditions, changes in the base rate and in the credit market rate of interest are due to changes in the monetary policy stance. Changes in the central bank's base rate will therefore also shift the credit supply curve and affect credit demand and hence real economic activity financed by credit.

2.1.3.Firm Characteristics Theories

These theories predict that the number of borrowing relationships will be decreasing for small, high-quality, informationally opaque and constraint firms, all other things been equal. (Godlewski & Ziane, 2008)

2.2.Empirical Evidence

Lending interest rates play the vital role as it has ability to affect total demand of money and subsequently, the investmentopportunities.Goldstein&Turner(1996)statedthat"the

accumulation of non-performing assets is generally attributable to a number of factors, including economic downturns and macroeconomic volatility, terms of trade deterioration, high interest rate, cost of assets, insider lending and moral hazard''. Margarida (2000) found out that the net interest margin reacts positively to operating cost and hence changing market condition would have an impact on the market interest rate which would have a direct impact on profit. Gambacorta (2004) argues that operating cost and credit risk, an increase in the cost of financial intermediation leads to higher lending rates as banks attempt to recoup the costs. Lending interest rate by CBs determine the profitability of CBs among other factors (Gardner, M., Mills, D. &Cooper Man, E. (2005). Assets in Sub-Saharan Africa revealed that bad assets are caused by adverse economic shocks coupled with high cost of capital and low interest margins (Fofack, 2005). Aboagye,Q., Akoena, T., Antwi, A & Gockel A.F. (2008) found that increases staff costs among other factors significantly increase net interest margins. According to Mucugu (2012) administrative cost, profitability cost of funds and loan loss determined the interest rates charged by the microfinance institutions in Kenya.

3. DATA AND METHODOLOGY

The study employed descriptive survey. The study was based on commercial banks in Kenya. A sample of 34 commercial banks in Kenya was used in the study. Secondary data was obtained from NSE handbooks and published audited 2013 financial statements of the selected CBs. ANOVA, Pearson Correlation analysis and a linear regression model were used since they all tend to show relationship between variables.

4. RESULTS

4.1.Cost Factors that Influence the Lending Interest Rates of CBs in Kenya

The Appendix I show the respondent's response on the extent to which they agreed with the given cost factors that influence lending rates of CBs in Kenya. From the findings, majority of the respondents strongly agreed that taxation for the CBs withholding taxes, stamp duties, and transaction taxes, profit taxes and license fees are determinants of lending rates of CBs in Kenya as indicated by a mean of 4.6552. Majority of the respondents strongly agreed that transaction costs determine the lending rates of CBs as indicated by a mean of 4.6207. The study found that respondents agreed that the staff cost, capital cost and Central Bank of Kenya supervisory fee determines the lending interest rates of commercial bank in Kenya as indicated by means of 4.2759, 4.2414 and 3.821 respectively. This was in line with Borio & Fritz (1995) who stated that the pricing of loan amount theoretically depends on the cost of funds, transaction cost, investment income, and mark-up.

4.2.Effect of Lending Interest Rates Variations

The study sought to know the extent to which changes in lending rates affects financial performance of CBs. From the findings, majority of the respondents indicated that lending rates variations affects the profitability, induced competition from other financial institutions to a very great extent, affects feasible investment opportunities and general growth of the bank as indicted by a mean of 4.79,4.69,4.69, and 4.66 respectively. The

study also found that changes in the lending interest rates affect loan supply to borrowers as indicated by a mean of 4.38. This implies that the impositions of interest rate used by several CBs leave operational costs higher and make them raise the lending rates. This is shown in Appendix 2.

4.3.Pearsons Correlations

Correlation analysis was used to establish the strength of association between variables as shown on Appendix 3. A correlation analysis was conducted to establish the effect of operational cost on lending interest rates in CBs in Kenya.

Oso and Onen (2009) asserted that correlation is used when a researcher wants to describe the association between two or more variables in terms of magnitude and direction while regression analysis is used when a study is about prediction of variables from other predictor variables.

From the findings, It can be observed that there exist a strong positive relationship between lending interest rates and operational cost having scored a correlation coefficient factor of r= 0.784,P=0.000<0.05 and a 95% precision level. The correlation was statistically significant since it had a P-Value of 0.000 which is less than 0.05.   This shows that operational costs have strong positive impact on the lending interest rates of the banks.

4.4.Regression Analysis

The study sought to establish if operational costs determine lending interest rates of CBs in Kenya. A linear regression model of operational costs versus lending interest rates was applied. The relationship equation was represented in the linear equation below.

$Y= α + βX+ ẹ$

Where: Y= Lending interest Rates, α = Constant Term, β= Beta coefficients, X= Operational cost, ẹ = Error Term

4.5.Model Summary

Appendix 4 shows the model summary. The model column of multiple models was reduced to a single regression by SPSS command and with a model indicating 1 implied that the there was one linear model used to determine the lending interest rates versus operational costs. R is the square root of R-Squared. R is the correlation between the observed and predicted values of dependent variable. This implies that there was association of 0.804 between CBs lending interest rates and operational costs which is characterized as very strong using the rule of thumb. R-Squared is the proportion of the variance in the dependent variable of lending interest rates that was explained by variations in the operational cost.

This implied that there was a variance of 64.7% between variables. Adjusted R^2 is called the coefficient of determination which indicates how CBs lending interest rates vary with variation in operational cost (an estimate of R^2 in the population). The study established that there existed a significance positive variation between CBs lending interest rates and operational costs as r= 0.604, P=0.000 < 0.05.

4.6.Anova

Appendix 5 shows the regression, residual and total variance. Regression is the sum of the squared deviation of the predicted variable about its mean. Residue is the sum of squared deviation of the known values of Y and the predicted values of Y based on the equation. The study established that there existed a significant goodness of fit between variables as F=15.264, P=0.000< 0.05.

The strength of variation of the predictor value of operational costs had significant influences on the CBs lending interest rates at 95% confidence level.

4.7.Coefficients

The linear regression model can be derived from Appendix 6 as

Y = 23.747 + 1.993X

This shows the Coefficients the study obtained. From the above regression model, it was found that CBs lending interest rates would be at 23.747 holding operational costs constant at zero (0). The study established that there existed a significant positive relationship between operational cost and CBs lending interest rates as r= 1.993, t=6.330, P=0.000<0.05.

It was evident that CBs lending rates increased with increase in operational cost. The findings were in line with Gambacorta (2004) who argued that an increase in the cost of financial intermediation leads to higher lending rates as banks attempt to recoup the costs.

5. CONCLUSIONS

The study established that increase in operational costs (taxation for the CBs withholding taxes, stamp duties, and transaction taxes, profit taxes and license fees, transaction costs, level of projected profits, capital cost and Central Bank of Kenya supervisory fee) leads to increased lending interest rates of CBs in Kenya. The study established that there existed a strong positive relationship between lending interest rates and operational cost having scored a correlation coefficient factor of r= 0.784,P=0.000<0.05 and a 95% precision level. The correlation was statistically significant since it had a P-Value of 0.000 which is less than 0.05. This was in line with Borio and Fritz (1995) who stated that the pricing of loan amount theoretically depends on the cost of funds, transaction cost, investment income, and mark-up.

REFERENCES

- Aboagye,Q., Akoena, T., Antwi, A and Gockel A.F. (2008). Explaining Interest Rate Spreads in Ghana, African Development Review, 20(3), 378- 399.

- Central Bank of Kenya (2012). Bank Supervision Annual Report, CBK Chou, W. (2000),

- Cihak , M. (2004), 'The Determinants of Lending Rates and Domestic Spreads in Croatia', In Republic of Croatia:

- Gambacorta, L. (2004). How Banks Set Interest Rates? National Bureau of Economic Research Working Paper 10295, Cambridge.

- Gardner, M., Mills, D. and Cooper Man, E. (2005). Managing Financial Institution 5th Edition. McGraw-Hill Higher Education.

- Goldstein, M., and Turner, P., (1996) Banking Crisis in Emerging Economies: Origins and Policy Options, Bank for International Settlements (BIS) Economic Papers No. 46

- Godlewski C. J. & Ziane, Y. (2008), "How Many Banks Does it Take to Lend? Empirical Evidence from Europe,Working Paper, Laboratoire de Recherche en Gestion & Economie

- Fofack (2005), 'Nonperforming loans in Sub-saharan Africa: Causal Analysis and Macroeconomic Implications. World bank policy research working paper No. 3769, SSRN

- Margarida, A. and Mendes, V. (2000). What financial systems for the year 2000. Paperback. Principia.

- Mugenda, O.M & mugenda, A.G (2003) Research Methods, Quantitative and Qualitative Approahes, Act press, Nairobi

- Mutai, P. (2000). The Influence of Interest Rates on the Profitability of CBs. Unpublished MBA Project, University of Nairobi.

- Mucugu W.J. (2012) Determinants of interest rates in micro finance Institutions in Kenya. Unpublished MBA project, University of Nairobi.

- Oso,W.Y. and Onen,D. (2009). "Writing Research Proposal and Report: A handbook for beginning researchers"(Revised Edition). Kenya: The Jomo Kenyatta Foundation

- Reddy, K., (2002), a comparative study on NPLs in India in the Global Context

- Salloum, A. and Hayek, J. (2012). Analyzing the Determinants of Commercial Bank Profitability in Lebanon, International Research Journal of Finance and Economics, Issue. 93

- Sargent, T. J., and Wallace N., (1975). "Rational Expectations, the Optimal Monetary Instrument and the Optimal Money Supply Rule" Journal of Political Economy, 83, pp 241-255.

- Wolfson (1996) Estimation in the multipath.change point problem for correlated data, The Canadian Journal of Statistics Vol. 24 No. 1, 37-53

- Siddiqui, M. A. (2012). Towards Determination of Interest Spread of CBs: Empirical Evidences from Pakistan, African Journal of Business Management. 6 (5), 1851 – 1862.

- Smithin, J. (2003) Controversies in Monetary Economies- Revised Edition, Northampton Edward Elgar Publishing Ltd.

- Tennant, D. (2006). Are Interest Rate Spreads in Jamaica too Large? Views from within the Financial Sector. Social and Economic Studies.

- Staudinger, S. (2002). "Optimal Monetary Policy and Term Structure Of Interest Rates: A Note," Journal of Economic Studies Vol. 29 No 2 pp. 98-108.

- Stiglitz, J. E., and Weiss, A. (2001). Credit Rationing in Markets with Imperfect Information, American Economic Review, June, 393-410.

- Thakor (1996), "Capital Requirements, Monetary Policy, and Aggregate Bank Lending: Theory and Empirical Evidence", The Journal of Finance, Vol. 51, No. 1, pp. 279-324.

- Wambua, J. (2006). The Casual Relationship between Interest Rates & Foreign Exchange Rates in Kenya, Unpublished MBA Project, University of Nairobi.

- Weth (2002), "The Pass-Through from Market Interest Rates to Bank Lending Rates in Germany", Discussion Paper No 11, Economic Research Center of the Deutsche Bundesbank.

- Williamson P. (1996): The economies of financial markets Oxford University press, (pp 141-167).

- Yousaiken, F., (2001), The Disposal of Non-Performing Loans and its Potential Influence.

Appendix 1. Cost factors that influence the lending interest rates

Statement	Mean	Std. Deviation
central bank supervision fees	3.8621	.95335
Taxation by the government	4.6552	.66953
Transactional costs	4.6207	.49380
Staff cost	4.2759	.64899
Capital cost	4.2414	.63556

Appendix 2. Effect of lending interest rates variations

Impact Assessment	Mean	Std. Deviation
Lending rates variations affects the profitability of CBs	4.7931	.41225
Changes in lending rates induces competition from other financial institutions	4.6897	.47082
Variations in lending rates affects feasible investment opportunities	4.6897	.47082
Changes lending interest rates has greatly affect loan supply to borrowers	4.3793	.49380
Lending interest rates have influences the general growth of the bank	4.6552	.48373

Appendix 3. Pearsons Correlations

		Bank's lending interest rate	Operational cost
Bank's lending interest rate	Pearson Correlation	1	
	Sig. (2-tailed)		
operational cost	Pearson Correlation	.784	1
	Sig. (2-tailed)	.000	

Appendix 4. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.804	.647	.604	2.87119

Appendix 5. ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	377.491	3	125.830	15.264	.000
	Residual	206.093	25	8.244		
	Total	583.584	28			

Appendix 6. Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	23.747	7.208		3.294	.003
	operational cost	1.993	.315	.820	6.330	.000

THE FINANCING CHOICE OF LISTED AND NON-LISTED FIRMS IN JORDAN: DOES MORE VISIBILITY MAKE A DIFFERENCE?

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Keywords	ABSTRACT
Capital Structure, Jordan, Listed Firms, Non-Listed Firms, Tangibility.	It is common knowledge that growing firms constantly look for new capital. This is why, going public is one way forward. Firms that seek stock exchange listing realize a number of advantages. An initial public offering (IPO) creates greater public awareness of the firm's products and services. In addition, such firms can improve their debt to equity ratio and as a result, reduce their cost of capital. In view of the benefits of listing, this paper examines the capital structure of listed and non-listed Jordanian non-financial firms. Based on the time period 2008-2011, and a total of 62 listed and 30 non-listed firms, the results indicate that the leverage ratio of listed Jordanian firms is significantly lower than their listed counterparts. Also, it is interesting to note that while the extent of the impact (negative) of profitability on leverage is more apparent in the case of the non-listed firms. The asset structure of assets is a significant determining factor of leverage in the case of non-listed firms only.
JEL Classification G30, G31, G32	

1. INTRODUCTION

For so long, listed firms have been the subject matter of some intense research activities. At the forefront of this effort is the issue of capital structure. For example, it is stated that "129 (roughly 10%) of the articles published in the three leading journals in finance (Journal of Finance, Journal of Financial Economics, and Review of Financial Studies) over the past three years have been related in some way to the capital structure question" (Denis, 2012). The interest in the capital structure choice is not expected to abate. The reason for this is straightforward. The fact that firms finance their assets from debt and equity sources, and the cost of equity capital, on average, is higher than that of debt, they must optimize this financial decision (capital structure). Indeed, it is in the interest of firms to minimize their

cost of capital because this would positively impact the availability of capital that is critical in financing their future investment decisions, and hence their economic performance. The publication of Modigliani and Miller's (1958) paper, where they illustrated that the

market value of the firm is not dependent on its capital structure, laid the economic framework for all future research on this subject. In other words, the importance of the paper by Modigliani and Miller (1958) lies in its impact on finance scholars to provide arguments under which an optimal financing decisions for firms would be relevant. This research effort has generated a number of theoretical models with testable implications. These theories include the Pecking Order Theory, Trade-off Theory, Agency Theory, and the Signaling Theory. Whilst all capital structure theories are well-explained in standard corporate finance textbooks, it must be noted that none of them provides financial managers with any equation that can help them in optimizing the capital structure of their respective firms. This is why, following any examination of the empirical literature, one cannot but realize that it is full of papers that examine what really explains, or determines, the capital structure of firms. As expected, this literature has started with some detailed analysis of the capital structure of firms which are listed on advanced economies' stock markets. Later on, firms in developing countries have started to attract their share in the empirical literature.

It is common knowledge that the empirical literature which examines the capital structure of listed firms is extremely large to even summarize. However, following the early, and well-known papers by Titman and Wessels (1988) and Rajan and Zingales (1995), many papers examined what impacts the capital structure of firms in various advanced countries. To name but a few, these include Demirgüç-Kunt and Maksimovic (1996), De Jong et al. (2006), Antoniou et al. (2008), Lin et al (2013), Rampini & Viswanathan (2013), Cohn et al (2014), Ramirez and Ruiz-Cabestre (2014), and Devereux et al. (2015). As stated above, listed firms in developing countries have also been attracting the attention of researchers. This interest is due to several reasons (Prasad et al., 2001). First, stock markets in developing countries are not as developed as those in the developed countries. They tend to be relatively small, highly concentrated, and lack liquidity. Second, before getting listed, many of the firms used to be state-owned enterprises with different management styles and objectives. Finally, the issue of information asymmetry in developing countries is probably more apparent and as expected, this problem must have implications in the financing of listed firms. On average, the empirical literature which examines the capital structure of firms in developing and transitions countries reports three main observations. First, firms have relatively low leverage ratios. Second, firms do not rely on long-term financing as much as their counterparts in the developed countries do. Finally, the capital structure is affected or determined by similar variables. Again, some of the papers which contributed to these conclusions include Booth et al. (2001), Mutenheri and Green (2002), Shah and Hijazi (2004), Klapper et al. (2006), Eldomiaty (2007), Teker et al. (2009), Bokpin (2010), Lee and Cheong (2010), Olayinka (2011), Ramjee and Gwatidzo (2012), Ganguli (2013), Koksal and Orman (2014), Pecina and Orsag (2015). These conclusions are also supported by the findings of the papers which examined the capital structure choice in some Arab countries including, for example, Saudi Arabia (Al-Sakran, 2001), Jordan (Omet, 2006), Kuwait, Oman, and Saudi Arabia (Sbeiti, 2010), Qatar (Ba-Abbad and Ahmad-Zaluki, 2012), and more recently, by Omet et al. (2015). Relative to listed firms, the capital structure choice of non-listed firms has received limited attention. However, and notwithstanding that fact that financial information about non-quoted firms

is difficult, if not impossible, to obtain, some researchers have examined this specific issue. This line of research is interesting due to several reasons (Schoubben and Van Hulle, 2004). First, based on the trade-off theory, listed firms' increased transparency (information) reduces their bankruptcy costs and this makes it in their interest to rely on more debt than non-listed firms. Second, based on the agency theory, non-listed firms are expected to have lower debt levels because debt, as a disciplining device, is more relevant and important in the case of listed firms. Third, the signaling theory states that non-listed firms do not need to use leverage to signal their financial performance to the various stakeholders and this implies less debt on their books. Fourth, the fact that listed firms enjoy superior access to financial markets in general, they are expected to obtain more debt financing than their non-listed counterparts. However, the fact that listed firms enjoy lower cost of issuing new equity, their capital structure might also have less debt as compared to non-listed firms. In addition to the above-mentioned four factors, it can be argued that companies that seek stock exchange listing realize a number of advantages. For example, following an initial public offering (IPO) and distributing shares to a wider and more diverse investor base, creates greater public awareness of the firm's products and services. In addition, a public firm can provide an enhanced stock-based compensation strategy for attracting and also retaining good managers and employees. Finally, going public is expected to improve a firms' equity base and this creates more leverage for financing growth. In other words, such firms can improve their debt to equity ratio (capital structure) and as a result, reduce their weighted average cost of capital (WACC). Although limited in number, some of the papers which examine the capital structure choice of non-listed firms include Claessens and Tzioumis (2006), Hol and Van der Wijst (2008), Ramlall (2009), Aquino (2010), and Andani and Al-Hassan (2012). On average, this empirical evidence does not point out much difference between listed and non-listed firms in terms of the choice of capital structure and its determinants. Against the above brief account of the literature, the primary objective of this paper is to examine the capital structure of listed and non-listed Jordanian firms. Indeed, the motivating factor behind the paper stems from the fact that the Authors managed to obtain enough financial information about not only listed firms, but more importantly, non-listed firms.

2. THE DATA, METHODOLOGY AND RESULTS

The empirical analysis is based on a total of 62 listed Jordanian non-financial firms and 30 non-listed firms and the period 2008-2011. Based on the published literature, and the available data, the following model is estimated:

$$\text{Leverage}_{i,t} = \alpha_0 + \beta_1 \text{TANG}_{i,t} + \beta_2 \text{ROA}_{i,t} + \beta_3 \text{SIZE}_{i,t} + \beta_4 \text{DEP}_{i,t} + \varepsilon_{i,t} \tag{1}$$

where Leverage is total liabilities to total assets, TANG is fixed assets to total assets, ROA is income before interest and tax to total assets, SIZE is the natural logarithm of total assets, and DEP is the depreciation expense (depreciation to total assets).

It can be argued that the value of fixed assets can be used as collateral and thus improves the terms of debt financing (Myers and Majluf, 1984). Also, according to the pecking order theory, firms prefer internal over external funds and if external funds are required, their first choice would be to issue debt (Myers and Majluf, 1984). Therefore, this theory

predicts a negative relationship between firm profitability and leverage. However, due to the tax deductibility of interest payments, it can also be argued that highly profitable companies tend to have high levels of debt (Modigliani and Miller, 1963). In addition, the fact that large firms tend to be more diversified and older than small firms, such firms find it easier to seek debt financing (Rajan and Zingales, 1995). Finally, the fact that depreciation expenses are deducted for tax purposes, this non-debt tax shield can be looked at as a substitute for debt financing. In other words, firms with greater levels of non-debt tax shield might choose to have less debt. In Table 1, we report some descriptive statistics about the dependent and all independent variables. Based on these Table, the following comments can be made. First, whilst it is not argued that the sample of the non-listed firms is a good representation of the Jordanian private (non-listed) sector, it is clear that their mean leverage ratio (46.7 percent) is much higher than their listed counterparts (34.7 percent). This observation is obviously unfortunate because it indicates that listed firms rely more on equity financing, and this is, as commonly known, more expensive.

Table 1: **Some Descriptive Statistics**

	LEV	TANG	ROA	SIZE	DEP
Listed Firms					
Mean	0.347	0.424	0.024	16.988	0.033
Median	0.318	0.389	0.032	16.737	0.029
Max.	0.938	0.936	0.433	20.602	0.119
Min	0.047	0.089	-0.437	13.790	0.000
Std. Dev.	0.196	0.211	0.110	1.384	0.022
Non-Listed Firms					
Mean	0.467	0.293	0.062	14.954	0.169
Median	0.412	0.263	0.028	15.023	0.037
Max.	0.955	0.842	0.536	17.954	0.839
Min	0.118	0.050	-0.211	12.484	0.000
Std. Dev.	0.246	0.208	0.111	1.211	0.336

Second, and as expected, the mean size of the listed firms, measured by the natural logarithm of total assets (16.988) is larger than that of the non-listed firms (14.954). Third, the asset structure of the listed firms contains a much higher proportion of fixed assets.

Listed and non-listed firms have 29.3 percent and 42.4 percent of their assets in the form of fixed assets respectively. Finally, it is useful to note that the reported mean ratios of leverage for our sample of listed firms (34.7 percent) is much lower than the 56 percent in China (Li et al., 2009), 58 percent in Turkey (Tecker et al., 2009), and the 53 percent in the UK, 49 percent in Cyprus, 61 percent in Austria, and the 61 percent in Germany (Muradoglu et al., 2010). In actual fact, the relatively low leverage ratio among listed Jordanian firms is comparable to only the 29 percent that exists in Saudi Arabia (Al-Ajmi et al., 2009), and the 39 percent in Mexico (Bastos et al., 2009). The regression results are reported in Table 2. Again, based on these results, the following observations are made.

Table 2: Regression Results: Listed Firms

Variable	Coefficient	t-statistic	Coefficient	t-statistic
	Listed Firms		**Non-Listed Firms**	
TANG	-0.004	-0.045	-0.212	1.964[**]
ROA	-0.389	-5.925[*]	-0.886	-6.239[*]
SIZE	0.023	9.488[*]	0.041	11.599[*]
DEP	-0.088	-1.777	-0.057	-0.697
Adj. R^2	0.391		0.592	
D-W Stat.	1.980		1.942	
F-statistic	53.820[*]		58.489[*]	

First, listed firms' asset structure (TANG) is not significant in the case of the listed firms. However, for the non-listed firms, the sign of this coefficient is negative (-0.212) and significant. This finding is not really surprising. According to the trade-off theory, a positive relationship between debt and fixed assets is expected. However, the pecking order theory argues that firms with more of their assets fixed tend to have less information asymmetry and as a result, less likely to issue debt. Second, the coefficient of firm profitability (ROA) is significant and negative in the case of the listed (-0.389) and the non-listed firms (-0.886). In other words, firms prefer to rely on retained earnings and not on external funds (pecking order theory). Whilst these coefficients are as one might expect, it is interesting to note that the extent of the impact (negative) of profitability on leverage is more apparent in the case of the non-listed firms. Third, the coefficient of firm size is consistently significant and positive. This conclusion is in agreement with the trade-off theory. In other words, larger firms tend to be more diversified and less likely to face financial distress and hence, they find it easier to obtain bank financing. Finally, for both the listed and non-listed firms, the coefficient of the non-debt tax shield (DEP) is not

significant. In addition to the above analysis, we estimate model 1 using both the listed and non-listed firms. However, in this case, we introduce a dummy variable (DUM) which is equal to zero for the non-listed firms and 1 for the listed firms. The results are reported in Table 3. On average, the results are similar to those reported in Table 2. However, what is interesting to note is the value of the dummy variable which is equal to -0.239 and statistically significant. This implies that the leverage ratio of our sample of non-listed firm is significantly greater than that of the listed firms.

Table 3: Regression Results: Both Types of Firms

Variable	Coefficient	t-statistic
TANG	-0.045	-0.653
ROA	-0.443	-7.169[*]
SIZE	0.036	12.647[*]
DEP	-0.101	-1.315
DUM	-0.239	-5.251[*]
Adj. R^2	0.450	
D-W Stat.	1.952	
F-statistic	76.184[*]	

3. CONCLUSIONS

This paper has examined the nature and determinants of the capital structure choice of listed and non-listed Jordanian non-financial firms. Based on the time period 2008-2011, and a panel of 62 listed and 30 non-listed firms, and some descriptive statistics, the results indicate that listed Jordanian firms have relatively low leverage ratios. Also, the empirical results indicate that some of the known determinants of the capital structure choice of firms are applicable to both the listed and non-listed firms. However, the coefficients of these determinants are different between the two sets of firms. Based on the results of this paper, a number of questions can be stated. For example, what is the reason behind the low leverage ratios of the listed firms? In other words, is it demand-led (management of the firms) factors or supply-led (management of the banks) factors. This issue would be interesting to investigate and the only way to shed light on it is through a surveying the relevant Chief Financial Officers (CFOs) about their practice of corporate finance.

REFERENCES

- Al-Ajmi, J., H. Abo Hussein and N. Al-Salah, 2009, "Decisions on Capital Structure in a Zakat Environment with Prohibition of Riba: The Case of Saudi Arabia", The Journal of Risk Finance 10, 460-476.

- Al-Sakran, S., 2001, "Leverage Determinants in the Absence of Corporate Tax System: the Case of Non-Financial Publicly Traded Corporation in Saudi Arabia", Managerial Finance 27, 58-86.

- Andani, A. and S. Al-Hassan, 2012, "The Determinants of the Financing Decisions of Listed and Non-Listed firms in Ghana", Asian Economic and Financial Review 2, 751-771.

- Antoniou, A., Y. Guney and K. Paudyal, 2008, "The Determinants of Capital Structure: Capital Market-Oriented Versus Bank-Oriented Institutions", Journal of Financial and Quantitative Analysis 43, 59-67.

- Aquino, R.., 2010, "Capital Structure of Philippine Listed and Unlisted Firms: 1997-2008", UP College of Business Administration, Working paper 1005.

- Ba-Abbad, K. and N. Ahmad-Zaluki, 2012, "The Determinants of Capital Structure of Qatari Listed Companies", International Journal of Academic Research in Accounting, Finance and Management Sciences 2, 93-108.

- Bastos, D. W. Nakamura and L. Basso, 2009, "Determinants of Capital Structure of Publicly-Traded Companies in Latin America: The Role of Institutional and Macroeconomic Factors", Journal of International Finance and Economics 9, 24-39.

- Bokpin, G., 2010, "Financial Market Development and Corporate Financing: Evidence from Emerging Market Economies", Journal of Economic Studies 37, 96-116.

- Booth, L., A. Aivazian, Demirguc – Kunt and V. Maksimovic, 2001, "Capital Structure in Developing Countries", Journal of Finance 56, 87-130.

- Claessens, S. and K. Tzioumis, 2006, "Ownership and Financing Structures of Listed and Large Non-Listed Corporations" Corporate Governance 4, 266-276.

- Cohn, J., L. Mills and E. Towery, 2014, "The Evolution of Capital Structure and Operating Performance after Leveraged Buyouts: Evidence from U.S. Corporate Tax Returns", Journal of Financial Economics 111, 469-494.

- De Jong, A., 2006, "Capital Structure around the World: The Roles of Firm- and Country-Specific Determinants", Paper Presented at the EFA Meeting (Zurich).

- Demirguc - Kunt, A. and V. Maksimovic, 1996, "Institutions, Financial Markets and Firm Debt Maturity", World Bank Policy Research Paper 1686, World Bank, Washington DC.

- Denis, D., 2012, "The Persistent Puzzle of Corporate Capital Structure: Current Challenges and New Directions", The Financial Review 47, 631-643.

- Devereux, M., G. Maffini and J. Xing, 2015, "Corporate Tax Incentives and Capital Structure: Empirical Evidence from UK Tax Returns", Oxford University Centre for Business Taxation, Working Paper No. 15/07.

- Eldomiaty, T., 2007, "Determinants of Corporate Capital Structure: Evidence from an Emerging Economy", International Journal of Commerce and Management 4, 45-62.

- Ganguli, S., 2013, "Capital Structure – Does Ownership Matter? Theory and Indian Experience", Studies in Economics and Finance 30, 56-72.

- Holl, S. and N. Van Der Wijst, 2008, "The Financial Structure of Non-listed Firms", Applied Financial Economics 18, 559-568.

- Klapper, L., V. Sarria-Allende and R. Zaidi, 2006, "A Firm-Level Analysis of Small and Medium Size Enterprise Financing in Poland", World Bank Policy Research Paper Working Paper 3984.

- Koksal, B. and C. Orman, 2014, "Determinants of Capital Structure from a Major Developing Economy", Small Business Economies 44, 255-288.

- Lee, S. and K. Cheong, 2010, "The Political Economy of Financial Structure of Korean Firms", The Journal of Developing Areas 43, 221-232.

- Lin, C., P. Malatesta, and Y. Xuan, 2013, "Corporate Ownership Structure and the Choice Between Bank Debt and Public Debt", Journal of Financial Economics 109, 517-534.

- Modigliani, F. and M. Miller, 1958, "The Cost of Capital, Corporation Finance, and the Theory of Investment", American Economic Review 48, 261-297.

- Modigliani, F. and M. Miller, 1963, "Corporate Income Taxes and the Cost of Capital – A Correction", American Economic Review 53, 433-443.

- Muradoglu, G., C. Onay and K. Phylaktis, 2010, "Capital Structure and Debt Maturity in Europe: The Role of FDI in European Integration", Emerging Markets Group Working Paper Series No. 24, City University, London.

- Mutenheri. E. and C. Green, 2002, "Financial Reform and Financing Decisions of Listed Firms in Zimbabwe", Department of Economics, Loughborough University Working Paper.

- Myers, S. and N. Majluf, 1984, Corporate Financing and Investment Decisions When Firms Have Information Investors Do Not Have", Journal of Financial Economics 13, 187-221.

- Olayinka, A., 2011, "Determinants of Capital Structure: Evidence from Nigerian Panel Data", African Economics and Business Review 9, 1-16.

- Omet G., 2006, "Ownership Structure and Capital Structure: Evidence from the Jordanian Capital Market (1995-2003)", Corporate Ownership and Control 3, 99-107.

- Omet, G., T. Al-Sharari, B. Abu Khalaf and H. Yaseen, 2015, "Determinants of Capital Structure in Various Circumstances: Could they be Similar?", Research Journal of Business and Management 2, 158-168.

- Pecina, E. and S. Orsag, 2015, "Capital Structure of Croatian Enterprises", Australian Journal of Sustainable Business and Society 1, 1-7.

- Prasad, S., C. Green and V. Murinde, 2001, "Company Financing, Capital Structure, and Ownership", SUERF Study No. 12, Vienna, SUERF.

- Rajan, R. and L. Zingales, 1995, "What Do we know about Capital Structure? Some Evidence from International Data", Journal of Finance 50, 1421-1460.

- Ramirez, M. and F. Ruiz-Cabestre, 2014, "Determinants of Capital structure: United Kingdom Versus Continental European Countries", Journal of International Financial Management and Accounting 25, 237-270.

- Ramjee, A. and T. Gwatidzo, 2012, "Dynamics in Capital Structure Determinants in South Africa", Meditari Accountancy Research 20, 52-70.

- Ramlall, I.,2009, "Determinants of Capital Structure Among Non-Quoted Mauritian Firms under Specificity of Leverage: Looking for a Modified Pecking Order Theory", International Research Journal of Finance and Economics 31, 83-91.

- Rampini, A. and S. Viswanathan, 2013, "Collateral and Capital Structure", Journal of Financial Economics 109, 466-492.

- Sbeiti, W., 2010, "The Determinants of Capital Structure: Evidence from the GCC Countries", International Research Journal of Finance and Economics 47, 54-79.

- Schoubben, F. and C. Van Hulle, 2004, "The determinants of Leverage: Differences between Quoted and Non Quoted Firms", Tijdschrift voor Economie en Management 4, 589-621.

- Shah, A. and T. Hijazi, 2004, "The Determinants of Capital Structure of Stock Exchange-Listed Non-Financial Firms in Pakistan", The Pakistan Development Review 43, 605-618.

- Teker, D., O. Tasseven and A. Tukel, 2009, "Determinants of Capital Structure for Turkish Firms: A Panel Data Analysis", International Research Journal of Finance and Economics 29, 179-187.

- Titman, S. and R. Wessels, 1988, "The Determinants of Capital Structure Choice", Journal of Finance 43, 1-19.

THE COMPARISION OF THE FINANCIAL FAILURE WITH ARTIFICIAL NEURAL NETWORK AND LOGIT MODELS[1]

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Keywords	ABSTRACT
Financial failure, Logit Model, Neural Networks	The purpose of this study is to predict of the financial failure of the companies traded at the Istanbul Stock Exchange, determine the financial rates affecting the financial failure and build a model by which companies having a financial failure risk could be detected. For this purpose, experiment set data and financial failure model have been estimated by using artificial neural network and logit models. The performances of artificial neural network and logit models have been compared by the analysis of the control set data and validity of these models. The 2008-2013 data of the manufacturing industry companies traded at Istanbul Stock Exchange have been used and, distinctly from the similar studies in the literature, along with the model in which all failure criteria exist, three different models, where the criteria of making loss in two or more consecutive years and debt surpassing active are handled, have been built and the effects of the criteria on financial failure have been compared. At the end of the study, in the determination of the financial failure, the fact that debt surpassing active is much more effective than making loss in 2 or more consecutive years has been supported with both artificial neural network and logit model results. In financial failure studies, some findings about the fact that debt surpassing active is a more important indicator have been obtained. Furthermore, the fact that the most important rates affecting financial failure are liquidity and financial structure rates has been determined with the models built.
JEL Classification G17	

1. INTRODUCTION

The technological advancement in the twenty first century plays an important role in changing field of operation, position and capital structure of the companies. While the companies following the time and advancing technology obtain a chance of international competition, the ones not following this advancement go or are in the verge of bankruptcy. A number of crises have been experienced both in our country and the world.

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[1] Compiled from a postgraduate thesis.

These crises cause the financial structure of companies disrupt and have adverse effects both for the companies and economy of the World. For this reason, recently, interest in the approaches which could predict the financial failure have been increased. Considering the studies carried out, it may be concluded that interest in the analysis where qualitative preference models and artificial neural network are used have particularly increased. Numerous definition about the company failure have been made and quite a number of indicators about the failure have been suggested. Companies experiencing problems and financial problems faced by all the companies may be defined as failures. The four criteria used in the literature extensively are the point in question. These are bankruptcy; company's failing to fulfill its obligations, company's failure to pay its debts and financial failure, respectively. Though these terms may substitute each other from time to time, there are differences between their real use (Altman, 2006). From the financial failure criteria

- *Bankruptcy*
- *Losing half of the capital*
- *Making loss for 2 or more consecutive years*
- *Loan default*
- *Debts surpassing the active*

have been extensively used in the analysis. In the studies carried out, while financial failure is modeled, dependent variable is formed according to these criteria and financial rates are used as an independent variable. In this study, different from the previous studies, models with three different dependent variables (model in which is debts surpassing active criterion is taken as the first dependent variable, two or more consecutive years of loss is taken as second dependent criterion and taking all failure criteria into account extensively used in the literature is taken as the third dependent criterion)   have been built and the artificial neural network (back propagation, multi layered artificial neural network) and the success of classification of the logit model have been compared. Of the companies traded at the Istanbul Stock Exchange, 142 companies whose 2008-2013 balance sheet and statement of income reached have been included in the analysis. In three different models, some estimations about the success and failure of the companies have been made and which analysis is more useful to use has been determined according to the results obtained via training set, test (confirmation +set) set and artificial neural network analysis. Analysis have been carried out by classifying the artificial neural network into two groups as experiment/training and control/test sets by its nature. Computer programs Stata 12 and Matlab softwares have been used for logit models and artificial neural network, respectively. In the second part succeeding the introduction part of the study literature review, and in the third and fourth parts methodology and data and variables have been included, respectively. In last part, results obtained from the logit and artificial neural network have been discussed.

2. LITERATURE REVIEW

In the recent years, interest of various researchers and pragmatists in financial failure have gradually increased and different company failure estimation models, based on several prediction methods, have been built. It can be concluded that in the analysis of the company failure, econometric models such as failure discriminant analysis (e.g. Beaver, 1966; Altman, 1968; Gentry, et al,1987; Aly, et al., 1992; Sori and Jalil, 2009; Wong and Ng, 2010) logit and probit (Ohlson, 1980; Altman, et al.,1994; Aziz and Lawson, 1989; Court and Rodloff, 1990; Foreman, 2003; Laitizen, et al., 1996; Abdullah, 2008; Doğanay, et al., 2006; Lin and Mc Clean 2001) have been preferred. It is known that logit model particularly in comparison with the conventional prediction models, such as discriminant analysis and multiple regression analysis, is one the most preferred models in company success *(Tucker, 1996).* In their studies Court and Rodloff (1990) compared Multiple Discriminant Analysis and Logit Model and suggested that logit model gave more successful results than discriminant analysis. In the recent years, advancement in the information technology has enabled artificial neural networks, an artificial intelligence technology to be used. These advancements has made artificial neural network be a tool suitable for use in estimating financial failure and some studies in which financial failure is estimated have begun to take place in the literature (e.g. Shah and Murtaza, 2000; Moshiri and Norman, 2000; Koleyni, 2009; Wallace, 2008; Huang, et al., 2007; Tae, et al., 2004; Rodriquez, 1999; Aktaş, et al., 2003; Tyree and Long, 1997; Thawornwong and Enke, 2004; Roh , 2007; Kodogiannis ve Lolis, 2002; Akkaya, et al., 2011)

Some studies in the literature have taken discriminant analysis, logit models and artificial neural network, which are extensively used in the prediction of financial failure, together and compared their performances. For example; in their studies Latizen, et al (1996) have compared Multiple Discriminant, Logit and Artificial Neural Network and have confirmed that artificial neural network give better results comparing with the other statistical methods. In their studies, Altman et al (1994) have compared Artificial Neural Network, Linear Discriminant and Logit Analysis and at the end of their study have observed that statistical analysis models have given better results compared to artificial neural networks.

3. METHODOLOGY

In the study, it is aimed to determine the most suitable method by comparing performances of the binary logit model and artificial neural network in the estimation of the financial failures of the companies operating at the manufacturing sector. Logit model is the one where dependent variable is categorical (intermittent, discontinuous) and independent variable may be continuous and categorical or double sided (Czepiel, 2009). In logit model, obtaining "odds ratio" is of a crucial importance. Odds ratio is closely related with probability rate. An event has an odds ratio as it has probability. Probability is used to express that most people are able to see the probability of an event happening it is known that probability value changes between 0 and 1; from this point "0" probability shows that the event will not happen whereas "1" shows that it will happen. Yet, there are different ways to define the probability of an event happening and odds ratio is one of them. Should a probability of an event happening be "p", its probability not happening is

"1-p". The odds ratio of an event, in other words the ratio of an event happening and not happening is defined as "0" *(Allison, 2012)*.

$$O = \frac{p}{1-p}$$

p   = probability of an event happening

1-p= probability of an event not happening

$$p = \frac{O}{1+O}$$

Logit model may be expressed as

$$\log\left[\frac{pi}{1-pi}\right] = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \ldots + \beta_k x_k$$

Here, pi value, y=1 is probability of happening. Left side of the equality may be expressed as "logit" or "log- odds ratio" *(Allison, 2012).* In the logit model parameter estimation may be made with the smallest squares and most similarity methods. [2]

Artificial neural networks are the computer systems having been built for the solution to the complicated problems which cannot be solved by the advancement of the new technological devices and formed with the inspiration from the biological neural networks *(Kohonen, 2000).* Artificial neural networks are analyzed in three main parts which are input, intermediary and output layers. These layers come together to form artificial neural networks. Artificial neural network model may be seen in **Figure 1**.

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[2] *For further information:* Aldrich, John Herbert. And Nelson, Forrest (1984) **"Linear Probability, Logit, and Probit Models"** Sage University Papers Series. Quantitative Applications İn The Social Sciences. Allison,P (2012) **"Logistic Regression Regression Models: Theory And Implementation Using"** Sas®: Theory And Application, Second Edition . Hosmer, Dw., Lemeshow, S., and Sturdıvant, Rodney X. (2013). **"Applied Logistic Regression"**, Third Edition .John Willey & Sons, 307, New York-Usa.   Cramer, J. S. (2003) **"Logit Models From Economıcs and Other Fıelds"** University Of Amsterdam and Tinbergen Institute. Pampel, Fred C. (2000) **"Logıstıc Regressıon: A Prıme"** University Of Colorado.

Figure 1: Artificial Neural Network Model[3]
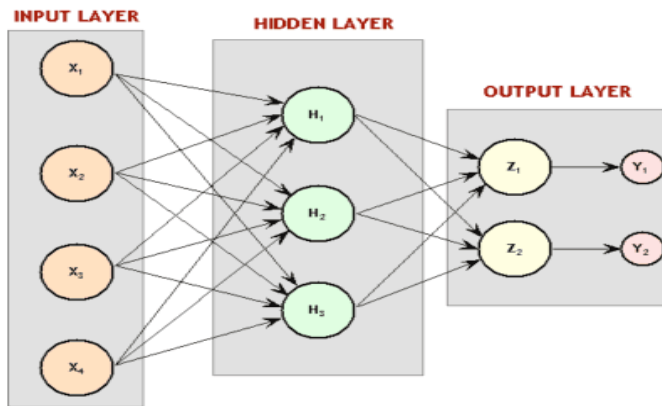
In the analysis, from the artificial neural network types, feed network type has been used because of its ability and success in the classification in the financial estimation and dependent variable estimation *(Thawornwong, 2004).* In a feed forward network, transaction components are generally delaminated. In this type of network, information flow is directly sent to output layer from the input layer and this information flow is carried out one way *(Haykin, 2009).*[4]

4. DATA AND VARIABLES

In the study, of the companies traded at the Istanbul Stock Exchange, data of the 142 companies whose 2008-2013 balance sheet and statement have been used and while financial failure is examined, distinctly from the other studies, three different models have been estimated for the artificial neural networks and logit analysis of the three different dependent variables. The definition of the variables used in the estimations have been summarized below.

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[3]*Reference: https://dctekkilic.wordpress.com/2015/03/23*

[4] *For further information:* Kohonen, T. (2000) **"Self Organizing Network"** 3rd.New York Spring Series İn İnformation Sciences. Wallace Martin P. (2008) **"Neural Networks And Theır Applıcatıon To Fınance"**, Business Intelligence Journal ,67-76 ,Freeman ,J.A. , Skapura ,D.M.,(1992) "**Neural Network Algorithm Applications And Programing Techniques"** (1-40)Addisson-Wesley Publishing Company. Hagan , M.T., Demuth. H.B. Behale, M.H., and Jesus, O. (2010) **"Neural Network Design"**2.Nd. Edition, S.2-6. Haykin ,Simon (2009) **"Neural Networks And Learning Machines"** Third Edition ,Mc Master University,Hamilton,Onterio,Kanada,1-76 .Patterson ,David W. (1996) **"Artificial Neural Networks Theory And Applications"**, İnstute Of Systems Science National University Singapure , 1-90. Graupe,Daniel (2007) **"Prıncıples Of Artıfıcıal Neural Networks"** 2nd Edition Advanced

Dependent Variable: For the first model, while dependent variable is formed according to the debts surpassing active, data set consists of 130 companies. It has been found that the number of successful companies is 65 and unsuccessful companies are 77. In order to equalize the number of successful-unsuccessful companies 12 unsuccessful companies have been left out of observation. In the second model, dependent variable is the situation of making loss for 2 or more consecutive years and 116 companies constitutes the data set. It has been detected that the number of the successful companies is 84 and unsuccessful companies is 58. So as to equalize the number of successful and unsuccessful companies, financial ratio of the 36 successful companies have been taken into account and they have been left out of the sample. In the third model, dependent variable is the model where all failure criteria have been taken into account and 106 companies constitute the data set. While the number of the successful companies is 53, the number of unsuccessful companies has been obtained to be 89. To equalize the number of successful and unsuccessful companies financial ratio of the 36 unsuccessful companies have been taken into account and they have been left out of the observation. In order to group the companies in the data set, of the values "0" has been given to financially unsuccessful, "1" to financially successful companies and dependent variables have been formed for three models[5].

Independent Variables : In all the models in the study, liquidity ratios, financial structure ratios, profitability ratios and operation ratios have been taken as independent variables. In our models, it has been found out that liquidity ratios and financial structure ratios have meaningful effects on determining the financial failure statistically. In the analysis, 30 financial rates in Appendix 1 have taken place in models as independent variable.

5. RESULTS

In order to analyze the financial failure, three different dependent variables have been formed and for each dependent variable both logit models and artificial neural networks have been estimated. In MODEL 1, the criterion of debts surpassing active has been analyzed. In this model, of the 30 independent variables only Liquidity Rate (acid test rate), Short Term Foreign Fund (STFF)/Total Funds and STTF /Total Foreign Funds financial rates have been observed to be statistically significant. The observation number for experiment/training set is 90 and for control/test set is 40. While training set consists of 45 successful, 45 unsuccessful companies, test set includes 20 successful and 20 unsuccessful companies.

The criterion of making loss for 2 or more consecutive years has been analyzed in MODEL 2. Discretely from the first model, in this model of the 30 independent variables, Long Term Foreign Funds (LTFF)/Total Funds and Operating Profit Margin Ratios have been found statistically significant. In the model, observation number for experiment/training

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[5] In the study it was aimed to build different models for all failure criteria, yet as the number of independent variables is not enough, models could not be built. The reason why these three models were chosen is the number of successful and unsuccessful companies was high.

set is 80; control/test set is 36. While training set consists of 40 successful and 40 unsuccessful companies test set contains 18 successful and 18 unsuccessful companies. In MODEL 3, all the failure criteria have been taken into consideration. In this model, of 30 independent variables, LTFF/Total Funds and LTFF/ Total Foreign Funds financial ratios have been analyzed to be statistically significant. The number of observation in the model is 76 for experiment/training set and 30 for control/test set. While training set consists of 38 successful and 38 unsuccessful companies, test set includes 15 successful and 15 unsuccessful companies.

In Appendix 2, Logit Model Results and Classification Success Values of Experiment/Training Set of the three models and in Appendix 3 Logit Model Results and Classification Success Values of Control/Test set are situated in. In Appendix 4, the results of artificial neural networks for three models[6] have been summarized. In the estimation of the artificial neural networks, back prop as learning algorithm, multi layered perception as the type of the network have been used. In the analysis, since the single layered perception are limited to solve the nonlinear problems, multi layered perception have been suggested and back prop learning rule, known as a learning rule of this network, has been used. In Appendix 2, once the meaningfulness of the three models has been analyzed, all models have been observed to be at 99% confidence level. It can be concluded that Logit Model estimated for MODEL 1 has correctly classified successful companies by 93.33% and unsuccessful companies by 95.56% on the experiment/training set. Logit Model has been able to classify 42 of 45 successful companies (93.33%) and 43 of the 45 unsuccessful companies (95.56 %) correctly. Of the 45 successful and 45 unsuccessful companies, 3 (6.67 %) and 2 (4.44 %) companies have been misgraded as unsuccessful and successful companies, respectively.   Total classification power of the model is 94.44%. According to these results, it can be concluded that the classification power of the unsuccessful companies of the logit model on experiment/training set for the first model is higher than its classification power of the successful companies.

In the logit model estimated for MODEL 2, the rate of classifying the successful companies correctly is 77.50%, whereas the rate of discriminating the unsuccessful companies correctly is 75%. Logit model has managed to classify the 31 of the 40 successful companies (77.50%) and 30 of the 40 unsuccessful companies (75%) correctly. 9 of the 40 successful companies (6.67 %) and 10 of the 40 unsuccessful companies (4.44%) have been misgraded as unsuccessful and successful companies, respectively. The total classification ratio of the model is 76.25 %, Contrary to the first model, the classification power of the unsuccessful companies of the second model of the logit model has been found to be lower than its power of classifying successful companies

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[6] In the determination ıf the suitable artificial neural network, trial and error method have been use extensively. In this context, various combinations of the parameters such as the number of hidden layers, the number of knots in the hidden layers, learning rate, momentum term, activation function have been tried and the one with the best performance both on experiment/training and control/test set has been obtained.

In the logit model estimated for MODEL 3, the correct classification of the successful and unsuccessful companies has been observed to be equal with 84.21 %. Logit model model has managed to classify 32 of the 38 successful companies (15.79%) and 32 of the 38 unsuccessful companies correctly. 6 of the 38 companies and 6 of the unsuccessful companies have been misgraded as unsuccessful and successful companies, respectively. Total classification ratio of the model is equal and it is 84.21 %.

When three models in Appendix 2 compared, it can be concluded that the highest classification success in the training set of the logit analysis belongs to the first model. When the other two models are analyzed, it may be seen that the 3. Model is more successful comparing to the second model. Both the third and the second model have managed to classify the successful companies better than unsuccessful companies.

According to Appendix 3, when the general meaningfulness of all three models are checked, all models are at the 99% level of confidence on control/test data. When validity analysis of the models are checked;

For MODEL 1, on control/test set data, the ratio of classifying successful companies correctly is 95% 1st Logit model has classified 18 of 20 successful companies and 19 of 20 unsuccessful companies correctly. 2 of the 20 successful (10.00%) and 1 of the 20 unsuccessful companies (5.00%) have been misgraded as unsuccessful and successful companies respectively. As in the experiment set, in the first model of the logit model, the power of classifying unsuccessful companies has been observed to be higher than the power of classifying successful companies. The total classification ratio of the model is 92.50%.

In MODEL 2 control/test set data, companies the power of classifying both successful and unsuccessful correctly is equal and this value is 77.78%. Model has classified 14 of the 18 successful (77.78%) and 18 unsuccessful companies (77.78%) correctly. 4 of the 18 unsuccessful companies (22.22%) and 4 of the 18 successful companies   (22.22%) have been misgraded as successful and unsuccessful companies, respectively. The total classification rate is same and is at 77.78% .The classification power of the second model has been found to be lower comparing to the first model. In other words, validity analysis results have shown that debts surpassing active criterion is more effective than making loss criterion.

For MODEL 3, as a result of the validity analysis, the power of classifying successful and unsuccessful companies correctly is equal and this rate is at 93.33%. Model has classified 14 of the 15 successful companies (93.33%) and 14 of the 15 unsuccessful companies (93.33%) correctly. Of 15 unsuccessful companies, 1 of them (6.67%) has been classified as successful and of 15 successful companies 1 (6.67%) has been misgraded as unsuccessful. For the third model, on control/test set, as on the experiment/training set, the percentages of the successful and unsuccessful companies are seemed to be equal. In logit analysis, in the experiment/training set and control/test set of Model 3, the classification ratios of the successful and unsuccessful companies are observed to be equal.

In Appendix 3, when three models are compared, the third model has been observed to give better results in the control/test set of logit analysis. When the other two models are

compared, first model has been observed to be more successful comparing to the second model. When the logit analysis results are checked, the least successful results are at the second model both for experiment/training and control/test set. According to this result, in the determination of the financial failure, criterion of making loss has been observed to be unsuccessful.

In the analysis of artificial neural networks, training of the networks has been done on experiment/training set data one year before the failure. After trained, the network having the optimum performance has been recorded on the computer programme used. Afterwards, the financial rates of the companies until a year before the failure have been presented to network and outputs have been obtained. Network outputs obtained have been grouped with "0, 50" based on cut score. As a result of this, companies whose cut score is over "0, 50" have been classified as "successful" and the ones with below "0, 50" have been classified as "unsuccessful". In order to search to what extent artificial neural network trained by using the experiment/training are valid apart from the data, validity analysis has been made as in the logit model.

When Appendix 4 is analyzed, it can be seen that MODEL 1 has managed to group the unsuccessful and successful companies son experiment/training set with a correct classification rate of 86.67% and 68.89 %, respectively. The model has discriminated 31 out of 45 successful (68.89%) and 39 out of 45 unsuccessful (86.67 %) companies correctly. 14 of the 45 successful (31.11%) and 6 of the 45 unsuccessful companies have been misgraded as unsuccessful and successful companies respectively. Total classification rate is 77.78%. In the 1st model the success of the logit analysis in training set is higher than artificial neural network analysis. In the control set, on the other hand, the correct classification rate of successful companies is 90.00 % and unsuccessful companies are 95.00%. Model 20 has discriminated 18 out of 20 (90.00%) successful companies and 19 out of 20 unsuccessful (95.00 %) companies correctly. 2 of the 20 successful (10.00%) and 1 of the 20 unsuccessful companies (5.00%) have been misgraded as unsuccessful and successful respectively. The results of both logit analysis and artificial neural network validity analysis are same and their total classification rates have been determined as 92.50%. The power of classifying unsuccessful companies on both experiment/training and control/test set is seen to be higher than the power of discriminating successful companies.

MODEL 2 has discriminated successful companies by 75.00% and unsuccessful companies by 70.00% correctly. 2nd model managed to classify 30 out of 40 successful companies (75.00%) and 28 out of 40 unsuccessful companies (70.00%) correctly. 10 of 40 successful (25.00%) and 12 of 40 unsuccessful companies (30.00%) have been misgraded as unsuccessful and successful, respectively. Total classification rate is 72.50%. For the second model, the power of discriminating unsuccessful companies on experiment/training set has been observed to be higher than the power of classifying successful companies. The same result has been obtained for the logit model as well. When the control/test set of the second model is analysed, the rate of discriminating successful companies is 94.44% and unsuccessful companies is 95.00%. The model, has managed to correctly classify the 17 out of 18 companies (94.44%) and 16 out out of 18

unsuccessful companies (88.89%). 2 of the 18 unsuccessful (11.11%) and one of the 18 successful companies (5.56%) set have been misgraded as successful and unsuccessful, respectively. In the 2nd model test set, artificial neural networks have shown a higher success of classification than the logit analysis.

For MODEL 3, the power of classifying the unsuccessful companies on experiment/training set 92.10% has been observed to be lower than the power of discriminating successful companies 97.37%. Model 3 has correctly classified the 31 out of 38 successful (68.89%) and 35 out of 38 unsuccessful companies (95.00%). 1 of the 38 successful (2.63%) and 3 of the 38 unsuccessful companies (7.90%) have been misgraded as unsuccessful and successful, respectively. The total classification power of the model is at 94.74%. The power of classifying successful and unsuccessful companies and total classification success rate of the third model on control/test data are same and this rate is at 100.00%. The model has discriminated the companies flawlessly. All of the 15 successful and unsuccessful companies have been classified correctly.

When Appendix 4 is analyzed, the 3rd model is seemed to have given better results in the training/test set of the three models. When the other two models are analyzed, 1st model has been observed to give better results than the 2nd model. In all three models the reason why the the results of artificial neural network is higher is that the network has been trained.

According to artificial neural network results, the least successful results for both experiment/training set and control/test have been recorded by the 2nd model, the least successful model. With this result, the fact that making loss criterion is not by itself enough to determine the financial failure has been proved by artificial neural networks as well.

For the validity analysis of the models, in the first model, the artificial neural networks and logit analysis are same while in the second model classifying power of artificial neural network has been found to be superior. On the training set data, on the other hand, artificial neural networks are more successful than logit model, only in the third model. In the 1st and 2nd model logit analysis have given better results is training set data. When dependent variables of the three models are analyzed, the most superior model has been found out to be the model 1, while the most superior one for the artificial neural networks is the 3rd model. According to the results of the study, it has been found out that debts surpassing active criterion has given results close to the third model built with combination of the all failure criteria and even has more successful classifying power than the third model in logit models.

6. CONCLUSION

In this study, some models have been built on the sample consisting of 142 companies traded at the Istanbul Stock Exchange and in order to estimate financial failure a year in avance the logit model, one of the conventional methods, and artificial neural networks have been compared. In the first model, it has been observed that in both logit and artificial neural networks, the classification rate of unsuccessful companies in both training set and test have been higher. This result has shown that debts are more effective on the determination of the unsuccessful. When the second model is analyzed, the success of classifying successful companies are higher in the logit and artificial neural networks for both training and test set. In this model, artificial neural network has given better results than logit analysis. The total classification success rate of the 2nd model has been lower than both of the models. In the third model, on the other hand, for logit and artificial neural network, successful companies in training and test set have shown more successful classification results than the unsuccessful companies. In this model, artificial neural networks have given better results than logit analysis as well. The classification power rate of the third model is higher than the other two models. The results obtained have shown that it is a more important criterion for companies to take all failure criteria into account. When two models are compared, it has been proved that debts were a more important criterion than making loss. When the dependent variables of the three models are analyzed, it has been found out that the most superior model in the logit analysis has been the 1st model, while the one in the artificial neural network has been the 3rd model.

In all three models built with the logit analysis, the rates obtained by long term and short term foreign funds have been found meaningful. As a result, it may be concluded that the most important rates in the analysis of the financial failure are liquidity and financial structure rates and these rates make importance differences in the successful and unsuccessful company groups. The findings obtained show that total debt is of a crucial importance on company failure. In the validity analysis of the models, in the model estimated according to debt surpassing active criterion, the classification power rate of artificial neural network and logit analysis have been found to be equal and in the other two models the classification power rate of artificial neural networks has been greater. On the training set data, on the other hand, only artificial neural network where all criteria dealt with has been more successful than the logit model. In the criteria of debt surpassing active and making loss for two or more consecutive years, logit analysis has given more successful results in the training set. At the end of the study, the criteria of debts surpassing active and making loss for 2 or more consecutive years have been compared with each other in the estimation of the financial failure and debt surpassing active has been found to be a stronger indicator of the failure.

REFERENCES

- Abdullah, N.A. (2008), "Predicting Corporate Failure of Malaysia's Listed Companies: Comparing Multiple Discriminant Analysis Logistic Regression and Hazard Model"*, International Research Journal of Finance and Economics*, Issue: 15, 201-218

- Aktaş, Ramazan. Doğanay, Mete and Yıldız, Birol (2003), "Mali Başarısızlığın Öngörülmesi: İstatistiksel Yöntemler ve Yapay Sinir Ağı Karşılaştırması"*, Ankara Üniversitesi SBF Dergisi*, 58-4

- Akkaya, Göktuğ Cenk. Demireli, Erhan and Yakut, Ümit Hüseyin(2009), "İşletmelerde Finansal Başarısızlık Tahminlemesi Yapay Sinir Ağları Modeli ile İMKB Üzerine Bir Uygulama"*, Eskişehir Osmangazi Üniversitesi Sosyal Bilimler Dergisi,* 10(2) 187

- Aldrich, John Herbert. ve Nelson, Forrest (1984), "Linear Probability, Logit, And Probit Models", *Sage University Papers Series. Quantitative Applications İn The Social Sciences ,*

- Allison, P (2012), "Logistic Regression Regression Models: Theory And Implementation Using", Sas®*: Theory And Application, Second Edition*

- Altman, Edward I. (1968), "Financial Ratios, Discriminant Analysis And Prediction Of Corporate Bankruptcy", *The Journal Of Finance*, 23 (4): 589-590.

- Altman,E. Marco G and Varetto,F. (1994), "Corporate Distress Diagnosis: Comparisons Using Linear Discriminant Analysis And Neural Networks", *Journal Of Banking & Finance*, 18,Pp. 505–529

- Chung,Kim-Choy. Tan, Shin and Holdsworth, David K. (2008), "Insolvency Prediction Model Using Multivariate Discriminant Analysis And Artificial Neural Network For The Finance Industry İn New Zealand", *International Journal Of Business And Management,* 3 (1): 19-29.

- Cramer,J. S. (2003)," Logit Models From Economıcs And Other Fıelds", *University Of Amsterdam And Tinbergen Institute*

- Court, P.W. and Radloff, S.E. (1990), "A Comparison Of Multivariate Dicriminant And Logistic Analysis İn The Prediction Of Corporate Failure İn South Africa", *De*

Ratione, 4(2):11-15.Dobson Aj (1990). An İntroduction To Generalized Linear Models. Chapman And Hall

- Czepiel ,Scott A. (2009), " Maximum Likelihood Estimation Of Logistic Significant Factors Associated With Substance Abuse İn School-Aged Children", *Georgia State University,Mathematics Theses Department Of Mathematics And Statistics ,* 4-1

- Foreman, D. R (2003), "A Logistic Analysis Of Bankruptcy Within The Us Local Telecommunications İndustry", *Journal Of Economics And Bussiness*. 55, 135-166

- Graupe, Daniel (2007), "Prıncıples Of Artıfıcıal Neural Networks", *2nd Edition Advanced Series On Circuits And Systems – Vol. 6. University Of Lllinois, Chicago, Usa New Jwrsey . London Sıngapore .Beıjıng . Shan*

- Haykin, Simon (2009), "Neural Networks And Learning Machines", *Third Edition Mc Master University,Hamilton,Onterio,Kanada*,1-76

- Hosmer, Dw., Lemeshow, S., and Sturdıvant, Rodney X. (2013), "Applied Logistic Regression", *Third Edition .John Willey & Sons, New York-Usa,* 307

- Huang, W, Laı, K. K., Nakamorı, Y., Wang, S., Yu, L., (2007), "Neural Networks In Finance And Economics Forecasting", *International Journal Of Information Technology & Decision Making, Vol*. 6, No. 1113–140 *International Educational And Professional Publisher)*Thousand Oaks London New Delhi University Of Colorado, Bould

- Kodogıannıs, V. Lolıs, A., (2002), "Forecasting Financial Time Series Using Neural Network And Fuzzy System-Based Techniques*", Neural Comput & Applic*, 11:90– 102

- Kohonen,T. (2000) , "Self Organizing Network", *3rd.New York Spring Series İn İnformation Sciences.*

- Moshırı, Saeed. Cameron, Norman. (2000), "Neural Network Versus Econometric Models İn Forecasting Inflation", *Journal of Forecasting J. Forecast*. 19, 201,217

- Ohlson J. A. (1980), "Financial Ratios And The Probabilistic Prediction Of Bankruptcy*", Journal Of Accounting Research*, 18-1 1, 109-131

- Rodrıguez, Agustin Alonso (1999), "Forecasting Economic Magnitudes With Neural Network Models", *Real Colegio Universitario Escorial-Maria Cristina--Spain. An Earlier Version Of This Study Was İncorrectly Printed İn The May 1999 İssue Of Iaer*

- Roh, T. H., (2007), "Forecasting The Volatility Of Stock Price Index*", Expert Systems With Applications* 33, 916–922.

- Patterson, David W. (1996), "Artificial Neural Networks Theory And Applications", *İnstute Of Systems Science National University Singapure* , 1-90

- Pampel, Fred C. (2000), "Logıstıc Regressıon: A Prımer", *University Of Colorado, Boulder, Sage Publıcatıons International Educational And Professional" Publisher Thousand Oaks London New Delhi*,1-25

- Sori, Zulkarnain Muhamad Ve Jalil, Hasbullah Abd (2009), "Financial Ratios, Discriminant Analysis And The Prediction Of Corporate Distress", *Journal Of Money, Investment And Banking*, 11: 5-15.

- Tae Kima, Yoon. Ohb, Kyong Joo. Sohnc, Insuk (2004), Changha Hwang , "Usefulness Of Artificial Neural Networks For Early Warning System Of Economic Crisis", *Expert Systems With Applications* 26 583–590 University Of Colorado, Boulder,

- Thawornwong,Suraphan. Enke ,David (2004), "The Adaptive Selection Of Financial And Economic Variables For Use With Artificial Neural Networks" , *Neurocomputing.*56, 205 – 232

- Tucker, Jon (1996), "Neural Networks Versus Logıstıc Regressıon In Fınancıal Modellıng:A Methodologıcal Comparıson", *University Of Southern California, Usa -,Plymouth Business School University Of Plymouth, Drake Circus, Plymouth, Devon, Pl4 8aa, United Kingdom*.1996 s.1-6

- Wallace, Martin P. (2008), "Neural Networks And Theır Applıcatıon To Fınance", *Business Intelligence Journal* ,67-76

- Wong, James M.W. Ve Ng, S. Thomas (2010), "Company Failure İn The Construction Industry: A Critical Review And A Future Research Agenda", *Xxıv Fıg International Congress*, Sydney, Australia, 11-16 ,April 2010

APPENDIX 1

FINANCIAL STRUCTURE RATIOS	LIQUIDITY RATIOS
Financial Leverage Ratio	Current Ratio
Short Term Foreign Funds (STFF) / Total Funds	Acid Test Ratio
Long Term Foreign Funds / Total Funds	Stock Dependence Ratio
STFF / Equity Capital	Currency Ratio
KSVD / Total Foreign Funds	Floating Assets / Foreign Funds Ratio
Long Term Foreign Funds / Total Foreign Funds	
Financing Rate (Equity Capital/Total Foreign Funds)	
Real Assets (RA) / Equity Capital Stock	
Fixed Assets/ Equity Ratio	
Equity Ratio	
Debt Equity Ratio	

OPERATING RATIOS	PROFITABILITY RATIOS
Inventory Turnover Ratio	Net Profitability Ratio
Avarage Number of Days Inventory on Hand	Operating Profit Margin
Receivable Turnover Ratio	Net Profit for the Period / Net Sales
Avarage Collection Period	Equity Dividend Rate
Asset Turnover	Asset Profitability
Real Assets Turnover Rate	Net Sales / STFF (Financial Rantability)
Current Assets Turnover Rate	Cost of Mechandise Sold / Net Sales

APPENDIX 2

Appendix 2. Experiment/Training Set Logit Models

Models	Variables	Coefficients (Standard Error)	Model Results	Classification
1.MODELS	Liquidity Rate (Acid test rate) STFF/Total Funds STTF /Total Foreign Funds Constant	4.4679** (1.8616) -23.9162*** (6.9182) 9.7472*** (3.8538) -2.5076 (2.7360)	LR = 95.34*** Log Likelihood= -14.7147 Pseudo R^2 = 0.7641 n=90	SC : % 93.33 CC : %95.56 FPDER: %4.44 FNDER : %6.67 TDC : %94.44
2.MODELS	LTFF/Total Funds Operating Profit Margin Constant	4.8394* (2.5512) 21.7856*** (6.3956) -0.5750 (0.6065)	LR = 33.14*** Log Likelihood= -38.8804 Pseudo R^2 = 0.2988 n=80	SC : %77.50 CC: %75.00 FPDER : %25.00 FNDER : %22.50 TDC: %76.25
3. MODELS	LTFF/Total Funds LTFF/Total Foreign Funds Constant	-35.2801 8.8579 17.2189*** 4.5417 -0.1120 *** 0 .5315	LR = 40.72*** Log Likelihood= -32.3210 Pseudo R^2 = 0.3865 n=76	SC : % 84.21 CC: %84.21 FPDER : %15.79 FNDER: %15.79 TDC: %84.21

(i)*,** and *** indicate significance at the level 1%,5% and 10%, respectively.(ii) n: is the number of observations (iii) SC: Sensitivity criterion gives the values of the correctly determined observations of the successful companies (1) .CC: Certainty criterion gives the values of the correctly determined observations of the unsuccessful companies (0) .FPDER: False positive discrimination error rate is the rate showing that the successful companies are discriminated as unsuccessful. FNDER: False negative discrimination error rate is the rate showing that the unsuccessful companies are discriminated as successful. TDC: Total discrimination criterion is the value showing the total correct estimation rate of the model. It gives the total discrimination rate of the successful and unsuccessful companies.

APPENDIX 3

Appendix 3. Control/Test Set Logit Models				
Models	**Variables**	**Coefficients (Standard Error)**	**Model Results**	**Classification**
1.MODELS	Liquidity Rate (Acid test rate) STTF/Total Funds STTF /Total Foreign Funds Constant	4.8912* 2.9111 -28.4957 ** (12.1293) 20.2803** (9.5321) -10.3663* (6.0406)	LR = = 42.24*** Log Likelihood = -6.60601 Pseudo R^2 = 0.7617 n=40	SC : % 90.00 CC : %95.00 FPDER : %5.00 FNDER : %10.00 TDC : %92.50
2.MODELS	LTFF/Total Funds Operating Profit Margin Constant	-7.4094** (3.4342) 7.0854 * (3.9506) 0.8629 (0.6993)	LR = 15.36*** Log Likelihood = -38.8804 Pseudo R^2 = 0.3078 n=36	SC : % 77.78 CC : % 77.78 FPDER : %22.22 FNDER : %22.22 TDC:%77.78
3. MODELS	LTFF/Total Funds LTFF/ Total Foreign Funds Constant	-53.2720*** (20.0269) 25.8079** (11.2886) 0.05239 (1.0965)	LR = 25.11*** Log Likelihood = -8.2370 Pseudo R^2 = 0.6039 n=30	SC : % 93.33 CC : % 93.33 FPDER : %6.67 FNDER : %6.67 TDC:%93.33

(i)*,** and *** indicate significance at the level 1%,5% and 10%, respectively. (ii) n: is the number of observations (iii) SC: Sensitivity criterion gives the values of the correctly determined observations of the successful companies (1) .CC: Certainty criterion gives the values of the correctly determined observations of the unsuccessful companies (0) .FPDER: False positive discrimination error rate is the rate showing that the successful companies are discriminated as unsuccessful. FNDER: False negative discrimination error rate is the rate showing that the unsuccessful companies are discriminated as successful. TDC: Total discrimination criterion is the value showing the total correct estimation rate of the model. It gives the total discrimination rate of the successful and unsuccessful companies.

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APPENDIX 4

Appendix 4. Experiment/Training Set Neural Network and Control/Test Set Neural Network

Models	Type of network	Learning Algorithm	Number Of Nodes Input Layer	Number of Hidden Layers	Number of Nodes Output Layer	Classification
1.MODELS	Multilayer Perceptron	Back Propagation	30	2 *1. Number of Hidden Layers : 5* **2. Number of Hidden Layers : 1**	*1*	*SC : % 68.89* *CC : %86.67* *FPDER : %13.33* *FNDER : %31.11* *TDC : %77.78*
	Multilayer Perceptron	**Back Propagation**	30	**2** 1. Number of Hidden Layers : 5 **2. Number of Hidden Layers: Sayısı :1**	1	**SC : % 90.00** **CC : %95.00** **FPDER : %5.00** **FNDER : %10.00** **TDC : %92.50**
2.MODELS	Multilayer Perceptron	Back Propagation	30	2 *1. Number of Hidden Layers : 2* **2. Number of Hidden Layers : 1**	1	*SC : %75.00* *CC : %70.00* *FPDER : %30.00* *FNDER: %25.00* *TDC: %72.50*
	Multilayer Perceptron	**Back Propagation**	30	2 1. Number of Hidden Layers : 2 **2. Number of Hidden Layers : 1**	**1**	**SC : %94.44** **CC : %88.89** **FPDER : %11.11** **FNDER : %5.56** **TDC: %86.84**
3. MODELS	Multilayer Perceptron	Back Propagation	30	2 *1. Number of Hidden Layers : 3* **2. Number of Hidden Layers : 1**	1	*SC : %97.37* *CC : %92.10* *FPDER : %7.90* *FNDER : %2.63* *TDC: %94.74*
	Multilayer Perceptron	**Back Propagation**	30	**2** 1. Number of Hidden Layers : 2 **2. Number of Hidden Layers : 1**	**1**	**SC : % 100** **CC : %100** **FPDER : %0** **FNDER : %0** **TDC: %100**

Notes: (i) Italic Information Experiment/Training Set Neural Network and dark green information Control /Test Set Neural Networks results
(ii)SC: Sensitivity ; CC: Certainty criterion *ölçütü* FPDER: False positive discrimination error rate, FNDER: False positive discrimination error rate and TDC:Total discrimination rate

WHAT IS WRONG WITH PRIVATE SHOPPING SITES? – EVIDENCE FROM TURKEY

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Keywords	ABSTRACT
Customer Complaints, E-Retailing, Logistics Management, Private Shopping **JEL Classification** M10, M31, L84	Since 2008, private shopping sites have been amongst the leading business models in the world. However, with the growing number of these companies, there are some problems which are declared by the customers through online platforms. Hence, this study provides evidence from Turkey through the examination of the customer complaints from the leading private shopping sites. In this regard, 1,014 customer complaints were analyzed for the period of three months (April, May and June 2013) from the popular online platform "sikayetvar.com". The findings reveal that private shopping sites have same types of customer complaints which occur mainly due to problems in the logistics capabilities of the companies. However, number of complaints differs significantly according to private shopping sites and months. This study contributes to literature through identification of variations in the number and category of complaints across months and among private shopping sites. Additionally, it provides managerial implications for private shopping sites to improve the logistics capabilities and other facilities

1.INTRODUCTION

The term retailing covers all business processes which involve the sale of goods and services to consumers for personal, family or household use (Berman and Evans, 2004). Retailing is a key driver of global economy, where the total sales generated by the world's ten largest retail companies were $1.25 trillion in 2012 (Deloitte 2014). In retailing, emerging research issues have been identified as growth of the internet and e-commerce, branding and customer loyalty, service success strategies, and behavioral issues in pricing and patronage (Grewal and Levy, 2009). With the adaptation to new digital age, the consumption choices, tremendous increase in the numbers of internet shoppers and the acceleration of social media platform have caused significant changes in physical retailing model (Türkiye Perakendecilik Meclisi Sektör Raporu, 2012). Therefore, development in direct marketing and technology has enabled retailers to reach customers through different distribution channels. For instance, catalog shopping and pioneering approaches such as television infomercials have created new business models, and later paved the way for e-retailing. This has enabled significant growth in e-retailing and e-retailers.

According to the e-Marketer, total sales of e-retailing is $1.251 trillion, and is expected to increase to $2.357 trillion by 2017 (E-Marketer, 2014). These indicators show the growth of both online markets and competition worldwide. E-retailers are usually classified as store or non-store based while e-retailer business models focus on the distribution channel, accessing to the customer and planning merchandise activities. With the advances in information, communication technologies (ICT) infrastructure and adoption of new business model, consumers increasingly shop and enhance the share of e-commerce in the 21st century.

The categories of e-retailers are described as click and mortar retailers, direct retailers, and virtual retailers. Click and mortar retailers operate as traditional brick and mortar retailers with an online store that incorporate online marketing options and integrate online and offline business activities (Dennis, Fenech and Merrilees, 2004). Direct retailers are the oldest format in three formats, and have a face to face relationship with customers through a catalogue system or door to door selling. Lastly, virtual retailers are defined as click only companies, or "pure play" e-retailers which use the internet alone as a distribution channel, and have no physical store. For instance, Avon is amongst the most known direct retailers in Turkey (Internet Retailer, 2012; Fortune, 2012) while Amazon is the most popular and well-known virtual retailer in the world (Kotler and Armstrong, 2006).

The retailing sector, growing in parallel to the Turkish economy, is one of the sectors most affected by the improvement in digital environment. By transferring to the online environment, well-known Turkish brands in the retail sector have focused on to reinvigorate themselves with the benefits of e-commerce (Turkishtime, 2013). This has also emerged the private shopping sites. Private shopping sites are among the pure play e-retailers (virtual retailers). According to European e-retailing index (2012), Turkey is the European market where the rate of pure play players (retailers only use e-commerce sale channel) is high. 60% of the top leading virtual retailers use only e-commerce sales channels (Deloitte, 2012). In this regard, the operating principles of private shopping sites are based on presenting famous brands to consumers at affordable price levels with limited quantities for a relatively short period of time and especially for website members (Ayadi, Giraud and Gonzalez, 2013). In Turkey, Markafoni is the first private shopping site which is established in 2008. After Markafoni, the number of private shopping sites has increased dramatically. Private shopping sites have achieved serious growth in Turkey not only in terms of penetration, but also in turnover figures (Özmen, 2012). They offer to their web site members highly discounted goods from well-known brands in limited quantities for a short period of time (Ayadi et al., 2013). Private shopping sites are reported to be successful and promising to enhance their market share in Turkey (Turkishtime Arasta, 2014). Considering that retailing is amongst the most diverse and dynamic sectors, it is challenging to achieve sustainable competitive advantage due to the increasing number of retailers using similar formats (George, Kumar and Grewal, 2013). This is also valid for private shopping sites where there is fierce competition among the players. Therefore, understanding and considering consumers' perspectives on issues with the private shopping sites need to be examined. In this regard, the aims of this study are twofold. Regarding the limited literature on the customers' complaints with the private

shopping sites in Turkey, the study wants to provide evidence from Turkey and reveal if the customer complaints of leading private shopping sites differ from each other.

2.LITERATURE REVIEW

E-retailing is most commonly defined as "the sales of goods and services through internet or other electronic channels, for personal or household use by customers" (Dennis et al., 2004). The literature on e-retailing is wide-ranging, but fragmented.

Research in the earlier years of e-retailing focused on the retailers' perspectives on the managerial challenges of e-retailing. As for the following stage, between 1990-2000, when internet was considered a new marketing channel, most research addressed the adaptation processes of consumers and focused on their buying behavior as well as experience. The development stages of e-retailing divided into three categories: retailer perspective, customer perspective and technological perspective, in a content analysis about e-retailing between 1996-2005 (Doherty and Chadwick, 2006). In the most recent stage, in which customers have become accustomed to online shopping, the research focus shifted to web site design, software tools and e-commerce infrastructure (Doherty and Chadwick, 2006).

With respect to this research focus, it is clear that the penetration of the internet has influenced both the customers and the business activities. From the customers' viewpoint, internet is a less costly way of participating in business activities but from the business perspective, it is important that their operations incorporate e-retailing to avoid being excluded from the new marketplace (Valvi and Fragkos, 2012).

In the 21st century, the development of e-retailing and growing competition are forcing companies around the world to re-examine their logistics activities with the objective of reducing costs and improving customer service (Gunasekaran et al., 2007). Effective logistics management is not only a success factor, but also a fundamental condition for e-retailers because of this new dynamic online marketplace (Marri et al., 2006). In this new marketing environment, although online shopping allows customers to purchase products at their convenience and attracts the attention of customers who would be reluctant to buy in other situations, customer loyalty can ultimately only be achieved by an efficient logistics system. Obtaining demand, as a one of the function of marketing is created through product and service, pricing and marketing communications (Tek, 2013). As an important player in the distribution channel, retailers aim to achieve not only marketing capability, but also logistics capability through the management of their logistics network. Therefore, the current high levels of competition lead retailing research to concentrate not only on marketing, but also on logistics and supply chain management. Although e-retailing is growing rapidly in the business environment, the literature on this topic is still limited. On the other hand, e-retailing also needs the combination of an efficient web site and fulfillment system as well. The web site has a vital role in influencing customers and providing choices. After the order is placed, the effective fulfillment of the order depends on the e-retailer's logistics system. Subsequent purchase decisions of the customer are influenced by this fulfilment process which involves pre-puchase, during purchase and post-purchase activities (Kotzab, 2005; Börühan, 2014). In e-retailing, the e-retailers' web

site performs as an invisible store for customers, the physical store location is no longer vital for the e-retailers. The service encounter with the customer is delivery driver (cargo company) rather than the cashier in the physical store. The e-retailers' web site acts like virtual shelves, and should ensure to provide accurate and up-to-date information about the products and inventory. Physical products still have to be supplied or produced, stocked, packaged and delivered to the customers. Therefore, logistics expenses have replaced store-related costs as the main retail expense (Soasta, 2012). In this regard, in the 21st century logistics has been recognized as a core competence contributing to e-retailers' competitiveness, in the new robust marketplace (Maltz et al., 2004; Mottner et al., 2002). Therefore, the e-retailers need advanced retail information systems. The typical tasks of a retail information system identified as follows (Kotzab, 2005) merchandise planning, order management, order receipts, invoice control, sales, payment and inventory control. However, these tasks are managed differently in retailers and e-retailers. Table 1 summarizes the physical and e-retailing with the logistics perspective.

Table 1: Physical and Internet Retailing: The Logistics Perspective

	Physical	E-Retailing	Key Difference
Network Design	determined by logistics costs, ownership costs and prospective demand	determined by supply chain organization	pure play and brick-and click options are available, as well as hybrids, depending on skill sets and history
Search	in-store search	computer aided inventory tools and display capabilities	few or no physical limitations on the internet implies need to scale up inventory capabilities and subsitute information for sensory input
Customer Logistics	self-service except for large items	seller's responsibility to buyer's door	final service encounter shifts from register to customer's home. cost shifts to logistics from stores.

Source: Maltz, A., Rabinovich, E. and Sinha, R. (2004), Logistics: The key to e-retail success, Supply Chain Management Review, 8, 56-63.

The prevailing characteristic of e-retailing is its intrinsic need for an efficient and reliable logistics management, since customers are spread worldwide. End customers' orders are much more unpredictable and unstable than in a B2B environment, and demand varies seasonally or according to special occasions. Compared to physical retailing, in e-retailing

order size per customer is smaller but the number of transactions is much higher. Distribution of the products to the highly dispersed customers is much more difficult than physical retailing, and the average value of shipments is very small, usually less than $50. Various orders, which combine both fresh food products with limited expiry dates and also non-food products may involve additional activities, such as (re)packing, consolidation and cross docking. Customers have high expectations, not only of the prices and quality of products and services, but also about speed of delivery. They are also aware of the presence of alternative e-retailers and physical stores (Turban et al., 2010).

Regarding these, according to the literature, apart from the attractiveness of web sites, improvements in logistics activities such as ordered products, delivery, supply, order processing, sales return, customer service will all affect success in e-retailing. (Fan et al., 2013; Holloway and Beatty, 2003; Kayabaşı, 2010; Tarn et al., 2003). An important cause of failure in e-retailing is that technology companies neglect the logistics infrastructure (Reynolds, 2001).

Therefore, customers are likely to encounter some logistics problems during online shopping. Customer complaints were examined, and classified into 4 groups, as web site design/interaction, fulfillment and reliability, security and privacy and customer service (Holloway and Beatty, 2003); In this classification, problems about web site information quality, web site navigation and ease of use, product selection and prices, shipment tracking, purchase process, stock availability are considered in the category of web site design/interaction. Fulfillment and reality problems are about timeliness of the delivery, order accuracy, delivery condition, billing accuracy and merchandise quality. Credit card fraud, shared e-mails are about security and privacy and finally service level and return handling problems are examined in the customer service. It was focused on fulfillment process and challenges in this process (Tarn et al., 2003). E-fulfillment is mainly concerned with customer expectations and satisfaction in this new economy. According to this point of view, due to the nature of differentiated demand, major challenges for B2C e-commerce includes; prompt delivery, supplier selection, product quality, receiving, storage, picking, shipping and reverse logistics.

516 customer complaints were examined regarding online shopping from the www.sikayetvar.com, dividing them into 7 groups (Kayabaşı, 2010). The most frequent logistics problems relate to ordered products, delivery, supply, returns (products and payments), order processing, customer service and after sales service. A more detailed examination reveals the main areas of concern are missing items, late delivery, long supply pending process of ordered products, product returns, unanswered e-mails, problems about order tracking, late service returns.

The data were collected from an EC customer data base and gathered 5993 customer complaints data (Fan et al., 2013). Customer complaints were classified into 6 groups as product defect, packaging errors, compatibility, pricing, customer cognitive differentiation and delivery delay. Product defects relates to any kind of damage occurring during any process, for example the delivery process or packaging process. Packaging errors include the delivery of the wrong product, the loss of the attachments and stolen products. Compatibility involves information service; lack of product information is a cause of

customer complaints. Complaints about pricing include producer or dealer discount after sale, and low price in other channel. Customer cognitive differentiation originates from the received product not meeting expectations because of inaccurate product images, purchase of inappropriate products, misleading warranty extension, the unexpected cancellation of orders, and poor service quality. Finally, delivery delay is caused by inaccurate customer information and dealer inventory shortage.

According to literature, it is clear that products will only create value if product and delivery meet customer expectations. The fulfilment process is the most visible part, the tip of the iceberg. However, there is also a need for e-retailers to examine the hidden part, the pre-purchase, during purchase and post-purchase stages. Customers' perception will be formed by the online shopping experience starting with the entrance to the web site until the delivery of the product, and after sales operations. Thus, the level of customer satisfaction will reflect the overall effectiveness of the entire logistics system involved in the fulfilment process.

Hence, it should be revealed why customer complaints occur. Regarding these, this study concentrates on the customer complaints targeting the leading private shopping sites in Turkey. The research design, analysis and results, findings and discussion, limitations and directions for further research are presented to serve the aims of the study.

3.DATA AND METHODOLOGY

The study aims to identify any variations in the number and category of complaints, across months and among private shopping sites. An analysis was made of customer complaints from the popular word of mouth marketing website "sikayetvar.com". "Sikayetvar.com" was established in 2001 as the first and leading customer complaints platform in Turkey. Currently, it has approximately 1.850.000 members and more than 1,300 corporate members following these customer complaints (Sikayetvar.com, 2015). The analysis was held for the months of April, May and June 2013. These months were chosen considering the seasonal impact (reflecting end of winter, spring and start of summer season). In the research, three leading private shopping sites were selected. The researchers preferred to use the letters of X, Y, Z not to create any negative image for the private shopping sites. For the three months period, 1,014 customer complaints were examined. In the selected sample of the customer complaints, the complainers comprise 49% of female and 51% male.

There is only one dependent variable, the number of customer complaints. The independent variables examined are months and private shopping sites. In the light of previous parts and the variables, three research questions were determined. The customer complaints are grouped into the following categories: the ordered products (Holloway and Beatty, 2003; Kayabaşı, 2010), delivery complaints (Holloway and Beatty, 2003; Kayabaşı, 2010), order processing complaints (Kayabaşı, 2010), supply complaints (Kayabaşı, 2010), accessibility to related personnel (Holloway and Beatty, 2003; Kayabaşı, 2010), sales returns (Kayabaşı, 2010), gift cards and a final category consisting of all complaints not covered by any of these previous categories. These categories are sub grouped into different items which are mainly derived from literature (the categories and

subgroups can be found in Appendix). The content of these categories are presented as follows:

Ordered Products Complaints: The offered range of products, product mix and depth with accepted prices enable e-retailers to attract customers and differentiate themselves in the market. These factors directly relate to order condition, order accuracy and order quality. Firstly, order condition refers to the absence of damage to the orders, which is essential for product use by the customer. Order accuracy refers to how closely shipments match customers' orders. This means having the appropriate items, in the desired quantity, without substitutions. Lastly, order quality refers to how well orders conform the product specifications, how well they function and meet the customers' needs (Mentzer et al., 2001).

Supply Complaints: The supply of products on time at an affordable right price is equally as important as providing a customer-oriented web site. It is essential for e-retailers to have reliable supply chain partners who are able to provide quality products and materials on demand. Supply process have to be supported with a back end supply chain management systems, furthermore order preparation should be automatic and paperless as much as possible (Tarn et al., 2003).

Delivery Complaints: Several market research studies have identified delivery problems as a major constraint on the growth of home shopping (Fernie and Sparks, 2009). Many e-retailers use promotions as marketing tools on their websites without establishing the required backend operations and thus may find it difficult to satisfy customers in terms of delivery time and product choice. It was pointed out that well designed web sites will be useless, if the e-retailers cannot deliver the goods (Krueger, 2000).

Order Processing Complaints: Customers and e-retailers interact with each other in online transactions. Although e-retailers provide self-service mechanisms for customers, these kinds of technology-based channels or mechanisms generally eliminate the human interaction, which is considered as a main component of physical retailing (Fan et al., 2013).

Sales Returns Complaints: Sales returns have become vital as companies make efforts to maximize the value they create for customers. It has been argued that returns are more common in e-retailing than in physical retailing due to the lack of opportunity for the customers to examine the product physically, or get enough reliable and current information before purchasing (Cooke, 2000; Griffis et al., 2012). The returns mainly result from product complaints such as wrong item arrival or damaged items, and to a lesser extent, a change of mind by the customer, or inaccurate delivery details (Tarn et al., 2003).

Customer Service Complaints: Customer service means a helpful responsive service that is effective in processing customer inquiries and returns/complaints during or after the sale (Holloway and Beatty, 2003). According to the literature, when customers perceive a high level of service recovery effort from the firm, negative perception of the firm is diminished considerably (Bearden and Teel, 1983; Oliver and Swan, 1989; Oliver, 1997).

Gift Card Complaints: Gift cards are an alternative non-monetary gift. This promotion activity (gift cards, coupons and discounts) can help to attract customers and develop customer commitment and loyalty.

Other Complaints: In this research, a number of complaints were found that were not covered by any of the above categories, and were therefore categorized under other types of complaints.

In light of these, the research questions are determined as follows: Research Question 1: Do the types of customer complaints and private shopping sites differ in terms of number of complaints?, Research Question 2: Do the types of complaints and months differ in terms of number of complaints?, Research Question 3: Do the private shopping sites and months differ in terms of number of complaints? Regarding the research questions, the research hypotheses are presented as; H_1: Private shopping sites and types of customer complaints differ in terms of number of customer complaints, H_2: The types of customer complaints and months differ in terms of number of complaints, H_3: The private shopping sites and months differ in terms of number of complaints. In the following section, analysis and results are presented.

4.ANALYSIS AND RESULTS

Based on the analysis and classification of 1,014 customer complaints from www.sikayetvar.com concerning the three leading Private Shopping Sites (named as X, Y, Z) for the months of April, May and June 2013. The findings are presented with descriptive statistics and hypotheses testing.

4.1 Descriptive Statistics

Figure 1 shows the frequency of customer complaints by gender. The percentage of gender distribution is approximately equal, but men's total complaints are slightly higher suggesting that males are more likely to complain than females.

Figure 1: Frequency of Customer Complaints by Gender

	female	male
■ Number of Complaints	503	511
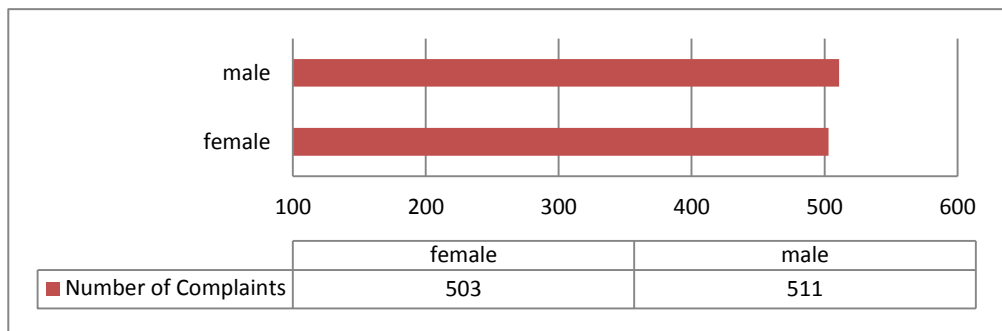
Although women use internet for shopping more frequently than men (Bae and Lee, 2011), men tend to complain more frequently than women. Figure 2 shows that shopping

site Y is the least successful in managing complaints, as it has significantly more than the other two private shopping sites analyzed in this study.

Figure 2: Percentage of Total Complaints across Private Shopping Sites X,Y and Z
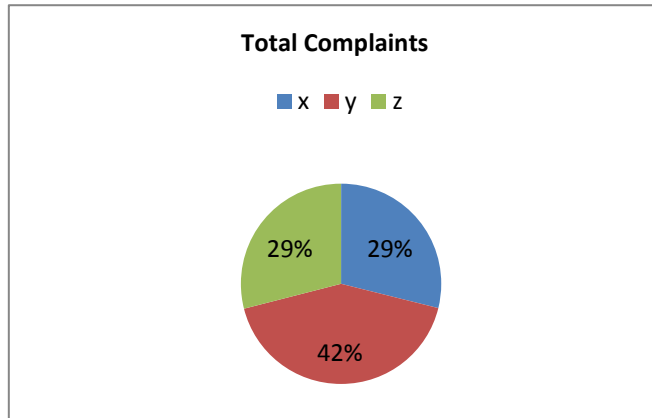
Additionally, the distribution of types of customer complaints is also presented as a significant descriptive. Figure 3 displays the frequency of types of customer complaints.

Figure 3: Frequency of Types of Customer Complaints
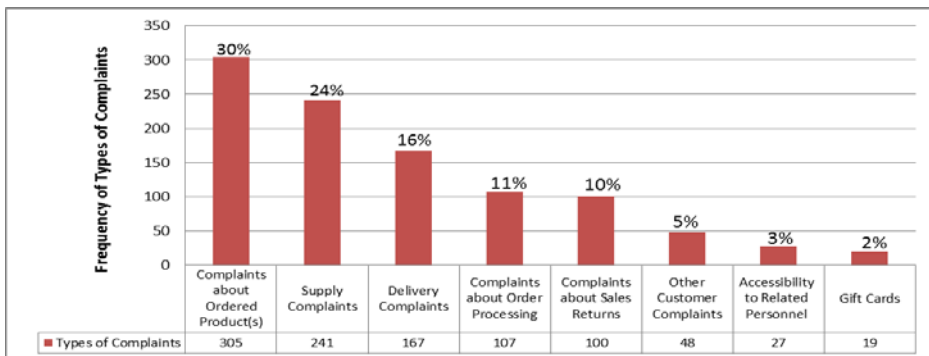
It should be noted that, the main areas of customer complaints are on ordered products (30%), supply (24%), delivery (16%), order processing (%11), which account for 80% percentage of the total complaints (80/20 rule). Other complaints are classified as sales return (10%), other (5%), customer service (3%) and gift cards (2%). It can be inferred that effectively managing these 4 main types of customer complaints has the potential to solve

80% of the total complaints. In this regard, implications for these types of complaints are provided.

In our research, it is revealed that most frequent complaints on ordered products concern the delivery of wrong items/missing items, the delivery of poor quality, damaged or defective products, and the delivery of imitations and second hand products. Moreover, typical supply complaints examined concern the procurement of ordered products, the length of the supply pending process, sales of out of stock items and the length of the time that the ordered products have been held (in stock).

Additionally, delivery delay is the major cause for delivery complaints. Delivery delay is a common problem in e-commerce because rather than arriving directly from e-retailers to customers. Order delivery is mainly performed by cargo companies. Late delivery, delivery that is neglected or wrongly addressed, or delay caused by the cargo companies all lead to delivery complaints. However, another important area of complaints is order processing complaints. This category is comprised of order tracking problems, cancellation of orders without customer knowledge, overdrawing from customers' credit card, failure to cancel orders on customer request, withdrawing money from a credit card without processing the order, sending order confirmation without sending the order itself, and providing misinformation about the cargo fee.

In this study, complaints on sales returns are due to length of time taken to compete the return process, problems in tracking the return process, failure to provide refunds, problems with refunds to customers credit cards, the lack of provision for returning the products, the use of gift cards in lieu of refunds, the limited validity or unsuitability if gift cards in lieu of refunds, and errors in refunds.

Another category of customer complaint is accessibility to related personnel. The main areas in this category are not being able to contact to the communication department, not following up after sending standard e-mails to customers regarding all types of complaints, ignoring to customers' e-mails, long delays and the inability of customer service to resolve customer complaints.

In this research, an additional category of complaints, gift cards are introduced. It is revealed that the most important complaints concern misinformation, unusable gift cards, and unloading promotion to the gift card. Lastly, in this research, the customer complaints which do not fit into any other type of category are placed in a separate category. The most common of these complaints are unusable mix promotions (not able to use gift card in combination with other promotions), misinformation about promotions, some technical problems with web-site, an excessive number of promotional and arrival emails during the day.

4.2. Hypotheses Testing

After the categorization, the customer complaints were analyzed in the SPSS 20 program. This dataset consisted of 3 categorized variables (types of complaints, months and firms) and 1 metric variable (total complaints), therefore Factorial ANOVA was used to find interactions/differences in terms of number of complaints between private shopping sites

and types of complaints; types of complaints and months; and private shopping sites and months.

Table 2: Tests of Between-Subjects Effects

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	29656,389[a]	43	689,683	13,093	,000
Intercept	25162,722	1	25162,722	477,701	,000
Private Shopping Sites*Types of Complaints	7314,028	14	522,431	9,918	,000
Types of complaints*Months	740,444	14	52,889	1,004	,476
Private Shopping Sites *Months	722,889	4	180,722	3,431	,021
Error	1474,889	28	52,675		
Total	56294,000	72			
Corrected Total	31131,278	71			

a. R Squared = ,953 (Adjusted R Squared = ,880) Dependent Variable: Number of Customer ComplaintsConfidence Interval : 0,95

As it can be observed from Table 2, there is a significant difference between private shopping sites and types of customer complaints; and also between private shopping sites and months. However, there is little variation in the numbers of various types of complaints across the three months, suggesting relatively stable levels of the different types of complaints. The differences of private shopping sites or seasonality do not interact with types of complaints. Additionally, the main types of customer complaints did not change across the months for all sites, complaints about ordered products, delivery and supply remained dominant.

Table 3: Types of Complaints across Private Shopping Sites (X,Y and Z)

Firms		Mean	Std. Error	95% Interval Lower Bound	Confidence Upper Bound
X	Complaints about Ordered Product(s)	32,333	4,190	23,750	40,917
	Delivery Complaints	22,667	4,190	14,083	31,250
	Supply Complaints	16,000	4,190	7,417	24,583
	Complains about Order Processing	17,333	4,190	8,750	25,917
	Accessibility to Related Personnel	3,667	4,190	-4,917	12,250
	Complaints About Sales Returns	8,667	4,190	,083	17,250
	Gift Cards	2,333	4,190	-6,250	10,917
	Other Customer Complaints	4,333	4,190	-4,250	12,917
Y	Complaints about Ordered Product(s)	70,000	4,190	61,417	78,583
	Delivery Complaints	40,000	4,190	31,417	48,583
	Supply Complaints	78,333	4,190	69,750	86,917
	Complains about Order Processing	13,333	4,190	4,750	21,917
	Accessibility to Related Personnel	9,333	4,190	,750	17,917
	Complaints about Sales Returns	18,333	4,190	9,750	26,917
	Gift Cards	2,667	4,190	-5,917	11,250
	Other Customer Complaints	1,667	4,190	-6,917	10,250
Z	Complaints about Ordered Product(s)	32,333	4,190	23,750	40,917
	Delivery Complaints	22,834	4,190	12,750	32,917
	Supply Complaints	24,333	4,190	15,750	32,917
	Complains about Order Processing	12,000	4,190	3,417	20,583
	Accessibility to Related Personnel	,667	4,190	-7,917	9,250
	Complaints about Sales Returns	14,000	4,190	5,417	22,583
	Gift Cards	2,000	4,190	-6,583	10,583
	Other Customer Complaints	10,000	4,190	1,417	18,583

Dependent Variable: Number of Customer Complaints

As it can be observed from Table 3, the three private shopping sites experienced similar types of problem, but X and Z's mean of types of complaints are lower than Y's mean of types of complaints. Also X and Z's types of complaints mean values are very close, but Y's types of complaints mean value are higher than both two types of complaints value. This means X and Z manage the customer complaints more effectively than Y.

While the study has three hypotheses, H_1 and H_3 are supported while H_2 is not supported. Table 4 displays the results of hypothesis testing.

Table 4: Results of Hypotheses Testing

H$_1$: Private shopping sites and types of customer complaints differ in terms of number of customer complaints.	Supported
H$_2$: The types of customer complaints and months differ in terms of number of customer complaints.	Not Supported
H$_3$: The private shopping sites and months differ in terms of number of customer complaints.	Supported

5.CONCLUSION AND FURTHER RESEARCH

With the internet being an alternative distribution channel, share of e-commerce has increased in Turkey as in the world market. In today's dynamic and fast-paced environment, retailing formats change rapidly. This research addresses the private shopping sites as pure play electronic retailers which are the non-store based retail format. This study examines the customer complaints of the leading private shopping sites' in Turkey (named as X,Y,Z) in terms of the interactions/differences between the types of customer complaints, months and companies. In this research, it is observed that months and types of customer complaints have no effect on the number of customer complaints. This result shows that private shopping sites have same characteristics and same type of managerial problems. Another finding revealed is, the types of customer complaints differ according to private shopping sites. Additionally, private shopping sites differentiate according to the months in accordance with number of complaints.

To summarize the results, the private shopping sites have the same types of customer complaints for each month (April, May, June 2013). However, number of complaints changes according to the private shopping sites and months. This result clearly shows that private shopping sites have same insufficiently managed types of complaints.

According to distribution of 1,014 customer complaints, customer complaints on ordered products (30%), supply (24%), delivery (16%) and order Processing (%11) complaints are revealed to be the prominent ones. The subsequent ones are sales return (10%), other (5%), accessibility to related personnel (3%) and gift cards (2%). This indicates that even though X,Y,Z company are the first three leading company in the private shopping retail format, they are faced with same types of customer complaints in each month. Besides that, when the classified groups are examined with their subgroups, it is observed that these complaints are caused by the inefficient logistics capabilities of the companies.

Regarding the findings, managerial implications are provided to the private shopping sites to reduce these complaints and increase customer satisfaction. In order to reduce the percentage of defective and poor quality products, companies should use quality management through the entire logistics process. Using high quality packaging and wrapping, providing consistent, adequate labelling of the products, avoiding selling fake or imitation products will decrease the product quality problems. Moreover, companies should provide product receipt and guarantee document within package and/or on the

website. For providing quality products and materials at all time, companies need to have reliable supply chain partners supported with a back end supply chain management systems.

Sharing current information with integrated logistics systems such as EDI (Electronic Data Interchange) between the supply chain partners and companies is vital to reduce the risk of not procuring the demanded products. Using information technologies, sharing real and current information in the supply chain partners will also help to diminish the delivery problems. Offering alternative innovative delivery options such as express delivery (in 3-4 hours, next day), priority delivery (three to four days) and regular delivery (five to ten days) can be an alternative for the consumers who are eager to pay more for additional value adding activities. In addition, delivery terms and conditions should be accessed easily on the website. Also delivery types and periods, cause of late delivery and information about unsent orders should be given to the customers interactively. After delivering the order, companies should provide order tracking systems and send order status notification about cancelations or order confirmation, provide order cancelation option to the customers with clear information, give more information about shipment and cargo fee.

Apart from these, if the customers are encountered with a return, they should find clear and comprehensive information about product return and refund policy on the web site of the e-retailer. According to this policy, customers must identify their reasons for returning the item. Using return tracking in this process will help companies and customers to reduce total time spent in return and repayment process.

If the customers have any problems during the ordering process, they should reach to the related department personnel quickly. In this regard, companies should provide interactive call center service and give periodical training to their personnel suitable with their job description. Furthermore, companies should return message of customer complaints with accurate answers, reduce the holding time on the phone, stop sending standard e-mails to the owner of the complaints, provide 7/24 online support systems on the web site so that customers can write their complaints, questions or suggestions.

In some occasions, companies give gift cards to their customers to increase customers' loyalty. However, this kind of promotional activities can be difficult to manage. Therefore, companies should avoid giving missing information about gift card policy, avoid cancellation of gift card usage in case of product returns, and avoid unloading guaranteed gift cards to the customers' accounts. Lastly, other complaints that the companies should overcome are; using multiple gifts cards at a single purchase transaction, giving right information about the current campaign and reducing the technical problems of the website with the supporting systems. As discussed in this study, logistics management is vital for the private shopping sites due to lack of physical store in their retail format. Their web sites are like a virtual store presenting all their product and services to their customers. Hence, especially logistics operations, sufficient infrastructure, payment systems and the promotional marketing activities are critical success factors for the private shopping sites. As for future research, more private shopping sites' customer complaints can be examined and their types of complaints differences can be revealed.

Furthermore, classification of customer complaints can be used for the other e-retailing formats in Turkey. Future research can be conducted to shed light on the private shopping sites' rate of replying to the customer complaints (rate of return to customer complaints) and companies' success in managing this process. In this study, only one metric variable (number of complaints) was used in the hypotheses testing while it was the only publicly available variable. In case of a special agreement between researchers and private shopping sites, data on other metric variables can be obtained and the scope of the study can be extended.

REFERENCES

- Ayadi, N., Giraud, M. and Gonzalez C., 2013, "An investigation of consumers' self control mechanism when confronted with repeated purchase temptations: Evidence from online private sales," Journal of Retailing and Consumer Services, 20(2013), 272-281.

- Bae, S. and Lee T., 2011, "Gender differences in consumers' perception of online consumer reviews," Electronic Commerce Research, Vol. 11, 201-214.

- Bearden, W. O. and Teel, J. E., 1983, "Selected determinants of customer satisfaction and complaint reports," Journal of Marketing Research, 20(1), 21–28.

- Berman, B. and Evans, J. R., 2004, "Retail Management, A Strategic Approach," 9th Edition, USA: Pearson Prentice Hall.

- Börühan, G., 2014, "The impact of logistics service quality on customer satisfaction during the process of order fulfillment in E-Commerce, the associated practices for online private shopping sites," PhD Thesis, Institute of Social Sciences, Yaşar University, İzmir.

- Cooke, J. A., 2000, "The physical challenges of the virtual sale, Logistics Management and Distribution Report," 39(10), 67-73.

- Deloitte 2012, "European eCommerce assessment 2012 benchmarking the top 200 in online retail," https://www2.deloitte.com/content/dam/Deloitte/nl/Documents/consumer-business/deloitte-nl-european-ecommerce-assessment-2012.pdf.

- Deloitte, 2014, "Global powers of retailing," http://www2.deloitte.com/global/en/pages/consumer-business/articles/global-powers-of-retailing-2014.html .

- Dennis, C., Fenech, T. and Merrilees, B., 2004, "E-Retailing," 2nd Edition, USA: Taylor & Francis Group.

- Doherty, N. F and Ellis-Chadwick, F., 2006, "New perspectives in internet retailing: a review and strategic critique of the field," International Journal of Retail and Distribution Management, 34(4/5), 411-428.

- E-Marketer, 2014, "Global B2C ecommerce sales to hit $1.5 Trillion this year driven by growth in emerging markets," http://www.emarketer.com/Article/Global-B2C-Ecommerce-Sales-Hit-15-Trillion-This-Year-Driven-by-Growth-Emerging-Markets/1010575.

- Fan, Y. W., Miao, Y. F. and Wu, S. C., 2013, "Customer complaints and service policy in electronic commerce,"   South African Journal of Business and Management, 44(3), 15-19.

- Fernie, J. and Sparks, L., 2009, "Retail Logistics Management, Emerging Issues and New Challenges in the Retail Supply Chain," 3rd Edition, London: Kogan Page.

- Fortune, 2012, "Avon: The rise and fall of a beauty icon," http://fortune.com/2012/04/11/avon-the-rise-and-fall-of-a-beauty-icon/.

- George, M., Kumar, V. and Grewal, D., 2013, "Maximizing profits for a multi-category catalog retailer," Journal of Retailing, 89(4), 374-396.

- Grewal, D. and Levy, M., 2009, "Emerging issues in retailing research," Journal of Retailing, 4, 522-526.

- Griffis, S. E., Rao, S., Goldsby T. J. and Niranjan, T. T., 2012, "The customer consequences of returns in online retailing: An empirical analysis," Journal of Operations Management, 30(2012), 282-294.

- Gunasekaran, A., Ngai, E. W. T. and Cheng, T. C. E., 2007, "Developing an e-logistics system: a case study," International Journal of Logistics: Research & Applications, 10(4), 333-349.
- Holloway, B. B. and Beatty, S. E., 2003, "Service failure in online retailing: a recovery opportunity," Journal of Service Research, 6(1), 92-105.

- Internet Retailer, 2012, "E-Retailers," http://www.internetretailer.com/trends/e-retailers.

- Kayabaşı, A, 2010, "Elektronik (online) alışverişte lojistik faaliyetlere yönelik müşteri şikayetlerinin analizi ve bir alan araştırması," İşletme Araştırmaları Dergisi, 2(2), 21-42.

- Kotler, P. and Armstrong, G., 2006, "Principles of Marketing," Boston:Prentice-Hall.

- Kotzab, H., 2005, "Retailing in the context of IT and distribution" in Kotzab, H. and Bjerre, M. (Eds.), Retailing in a SCM-Perspective, Denmark: Copenhagen Business School Press.

- Krueger, M., 2000, "E-fulfillment solutions, Manufacturing Systems," 18(12), 60-64.

- Markafoni (2015), https://www.markafoni.com/cms/biz_kimiz/.

- Maltz, A., Rabinovich, E. and Sinha, R., 2004, "Logistics: The key to e-retail success," Supply Chain Management Review, 8, 56-63.

- Marri, H. B., Irani, Z. and Gunasekaran, A., 2006, "E-Commerce and its impact in logistic management: a state of art," European and Mediterranean Conference on Information Systems (EMCIS), Spain.

- Mentzer, J. T., Flint, J. D., Tomas, G. and Hult, M., 2001, "Logistics service quality as segment- customized process," Journal of Marketing, 65, 82-104.

- Mottner, S., Thelen, S., and Karande, K., 2002, "A typology of internet retailing: an exploratory study," Journal of Marketing Channels, 10(1), 3-23.

- Oliver, R. L. and Swan, J. E., 1989, "Consumer perceptions of interpersonal equity and satisfaction in transactions: A field survey approach," Journal of Marketing, 53(2), 21-35.

- Oliver, R. L., 1997, "Satisfaction: A behavioral perspective on the consumer," New York : McGraw- Hill.

- Özmen, Ş., 2012, "Ağ ekonomisinde yeni ticaret yolu: E-Ticaret," 4th Edition, İstanbul Bilgi University Publication.

- Reynolds, J., 2001, "Logistics and fulfillment for e-Business," New York: CMP Books.

- Soasta 2012, "Retail best practices performance testing retail web and mobile properties," http://cdn.soasta.com/wp/wp-content/uploads/2012/06/Retail-Best-Practices-PDF.pdf .

- Şikayetvar.com (2015), https://www.sikayetvar.com/home/hakkimizda/.

- Tarn, J. M., Razi, M. A., Wen, H. J. and Perez, A. A. Jr., 2003, "E-fulfillment: the strategy and operational requirements," Logistics Information Management, 16(5), 350-362.

- Tek, Ö. B., 2013, "Marketing function and logistics revisited: revised dual sub-functional model approach," Logistics and Transport, 2(18), 51-66.

- Turban, E., King, D., Lee, J., Liang, T. P. and Turban, D., 2010, "Electronic commerce 2010: A managerial perspective," 6th Edition, New Jersey: Pearson.

- Turkishtime, 2013, "Yeni çağda perakende modeli nasıl değişiyor?" Ekonomi ve İş Kültürü Dergisi, 130.

- Turkishtime Arasta 2014, "Fonların kıskacında E-Ticaret, Alışveriş Merkezleri ve Perakendecileri Derneği Dergisi," 16(90), 30-33.

- Türkiye Perakendecilik Meclisi Sektör Raporu, (2012), http://www.tobb.org.tr/Documents/yayinlar/2012/PerakendecilikMeclisiSR.pdf.

- Valvi, A. C. and Fragkos, K. C., 2012, "Critical review of the e-Loyalty literature: A purchase-centred framework," Electronic Commerce Research,12(3), 331-378.

Appendix 1: Categories of Customer Complaints

ORDERED PRODUCT(S)	1. Damaged or defected product delivery
	2. Delivery of poor quality product
	3. Delivery of used product (second hand)
	4. Delivery of wrong items (size, color, etc.)
	5. Delivery of fake products or wrong products
	6. Sending incomplete order (missing items)
	7. Lack of receipt and guarantee document in delivery
	8. Overpricing
	9. Sending the present receipt to the present owner
SUPPLY	1. Supply problem of ordered products
	2. Long supply pending process of ordered products
	3. Sales of items that are out of stock
	4. Holding the ordered products during the order preparation
DELIVERY	1. Late delivery of orders
	2. Unsent orders to the customers
	3. Delivery of orders to the wrong address
	4. Lateness of cargo companies in order delivery
ORDER PROCESSING	1. Problems of order tracking
	2. Cancellation of orders without any prior notification to the customer
	3. Inability to cancel the order by customer request
	4. Withdrawing money from credit card although the order process hasn't finished
	5. Overdrawing from a credit card
	6. Misinformation on the order status
	7. Misinformation about cargo fee (shipment fee)

Appendix 1 ctd.: Categories of Customer Complaints

SALES RETURN	1. Problems about product returns (repackaging, sending by cargo)
	2. Long return process
	3. Problems during the process of returns tracking
	4. Problems during the repayment of returned products to the customers' credit card
	5. No refund
	6. Inability of product return
	7. Giving gift card instead of refund
	8. Giving short term or not usable gift cards instead of refund
	9. Refund of wrong products
	10. Sending poor quality or different products instead of return products
	11. Inability to return products
	12. Unexplained non-refunding
OTHER	1. Unable to use multiple gift cards at a single purchase transaction
	2. Misleading information on the campaign
	3. Unable to shop from the website due to technical problems
	4. Supply problems of multiple products in a single order
ACCESSIBILITY TO RELATED PERSONNEL	1. Unable to contact with communication department
	2. Sending standard e-mails to customers for all types of complaints
	3. Not responding to customers' e-mails
	4. Long waiting time in the line
	5. Incapability of customer service to solve the customer complaints
GIFT CARDS	1. Cancellation of gift card usage in case of product returns which was purchased with gift card
	2. Limited information on gift card usage
	3. Not loading guaranteed gift cards to the customers' accounts

FOREIGN OWNERSHIP AND CORPORATE PERFORMANCE IN TURKEY

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ABSTRACT

This study examines the relationship between the degree of foreign ownership and performance of recipient firms and test whether different levels of foreign ownership have different effects on corporate performance, using a balanced panel of 270 Turkish firms over the period of 2008-2012. It is found that there is a positive and statistically significant relationship between foreign ownership and corporate performance. However, there does not exist a significant difference among firms with different degrees of freedom in terms of corporate performance, except for the major foreign capital and wholly foreign capital firms in profitability.

1.INTRODUCTION

There is a vast amount of literature examining the foreign direct investment (FDI) and economic growth. Although studies provide mixed results about the effects of FDI, it is widely accepted that FDI plays a catalyser role for economic growth and development in especially developing countries. Foreign owned firms with ability of capital increase, technology and R&D transfer are tend to be more productive compared to their domestic counterparts. There are also many studies exploring the effects of ownership structure and firm performance. Accordingly, there is a substantial literature about the effects of foreign ownership and firm performance reporting even contradictory results. While some studies report a positive relationship between the degree of foreign ownership and firm performance, some report no evidence of relationship. In this study, using a balanced panel of 270 Turkish firms, over the period 2008-2012, it is tested whether there is a significant difference between firms with different degrees foreign ownership in terms of corporate performance in Turkey. Additionally, the relationship between the degree of foreign ownership and corporate performance is investigated. It is believed that the findings will contribute to both FDI and ownership structure literature in Turkey.

This paper is organized as follows. Next section will provide a literature review about links between foreign ownership and firm performance tested in various countries. Description of data and research methodology, presentation of empirical findings will follow this section. The last section concludes.

2.LITERATURE REVIEW

Doms and Jensen (1995) report that foreign owned firms in the U.S. are more productive compared to their domestic counterparts. Chhibber and Majumdar (1999) investigate the firm performance in both foreign and domestic companies and show that there is a positive relationship between foreign ownership and firm performance. Aitken and Harrison (1999) provide evidence that shows different degrees of foreign capital have an effect on performance of Venezuelan manufacturing plants and a positive effect for small plants only. Blomström and Sjöholm (1999) show that foreign ownership in Indonesia has a positive and statistically significant relationship with labour productivity; however, it doesn't differ for major or minor foreign owned firms.

Akimova and Schwödiauer (2004) investigate the effect of ownership structure on corporate performance of privatized corporations in Ukrainia. Their results reveal that there are significant ownership effects on the performance, although it is a non-linear relation. Barbosa and Louri (2005) focus on the performance of MNEs operating in Portugal and Greece compared to their domestic counterparts. They report performance differences between foreign and domestic companies. Douma et al. (2006) analyze the relationship between foreign ownership and firm performance in a large emerging market and show that higher degree of foreign ownership is associated with better firm performance, higher commitment and longer term involvement. Kimura and Kiyota (2007) find that there is a positive relationship between foreign ownership and financial performance for the companies in Japan.

Azzama , Fouadb , and Ghoshc (2013) examine the relationship between the degree of foreign ownership and financial performance in Egypt. Their results reveal that foreign ownership is positively associated with ROA, ROE and debt ratio. They also find that foreign ownership increases financial performance up to a level than declines. Their findings indicate that the effect of foreign ownership in Egypt is sector-specific.

Greenaway, Guariglia and Yu (2014) investigate whether there is a significant difference between purely domestic, minor foreign owned, major foreign owned and wholly foreign firms in terms of productivity and profitability in China. Their results reveal that although productivity and profitability initially rise with foreign ownership, they start declining once it reaches a certain point. Accordingly, they conclude that joint ventures perform better than wholly foreign-owned and purely domestic firms. Their findings also lead an inverted U-shaped ownership-performance relationship.

There are limited of studies about the degree of foreign ownership and firm performance in Turkey. Karatas (2005) compare the performance of domestic and foreign equity companies listed in ISE for the period 1992 – 2001. He conclude that foreign equity firms are better performers and the degree of internalization explain a substantial part of the financial performance differentials among the foreign-owned firms. Aydın, Sayım, and Yalama (2007) reveal that foreign-owned firms perform better than domestically owned firms only in terms of ROA measure. Taymaz and Ozler (2007) find that foreign plants are more profitable than domestic ones when they are first established in Turkish market by using data from 1983 -2001 period. They also find that the better performance is not

caused by foreign ownership, but larger size, capital intensity, growth rate and quality of labour force. Their results also indicate that foreign ownership does not increase survival rate. Bastı and Bayyurt (2008) report that foreign-owned companies are more efficient than domestically-owned companies. Erdoğan (2011) find that foreign-owned firms and domestically-owned firms do not differ in terms of financial performance ratios which are operating profit margin, net profit margin and return on assets. They also do not differ in terms of liquidity ratios which are current ratio and net working capital ratio. Bastı, Bayyurt and Akın (2011) investigate the impacts of several firm indicators like age, size, assets, R&D, expenses, and firm risks on the four corporate performance measures, ROE, TFP, BEP and ROA. Their results reveal that there is no significant difference between the performances of foreign owned and domestically owned firms.

3.DATA AND METHODOLOGY

The data used in this study is drawn from İstanbul Chamber of Industry database. This includes financial data for the top 500 industrial Turkish companies, over the period 2008-2012. After excluding the missing data, our final balanced panel data set covers 270 companies, 183 domestically owned and 87 foreign owned, and 1350 observations. Our observations are divided into four categories on the basis of the share of foreign capital paid for the sample firms. First category of all domestic firms covers 67% of our sample. The second category of minor foreign paid in capital firms contains includes observations with a share of foreign capital lower than 50% (13% of our sample). The third category of major foreign paid in capital firms with a share higher than or equal to 50% but lower than 100% (12% of our sample); and all foreign firms are 100% foreign owned (8% of our sample).

The significance of differences of these four categories of firms are tested in corporate performance in terms of return on assets, ratio of the firm's net income to total assets (ROA); return on sales, ratio of the firm's net income to its total sales (ROS) and finally labour productivity, ratio of the firm's net income to number of employees (Prod).

Table 1: Summary Statistics

		All Domestic Capital	Minor Foreign Capital	Major Foreign Capital	All Foreign Capital
ROA	Mean	0.074097	0.0621	0.152911	0.10232
	Stand Dev	0.106255	0.0925	0.150895	0.083651
ROE	Mean	0.130393	0.114794	0.381117	0.206714
	Stand Dev	0.650704	0.196878	0.427018	0.221244
Prod	Mean	52491.49	35387.61	86390.2	38694.48
	Stand Dev	108668.5	80292.67	159932.6	49823.09
Size	Mean	19.9076	20.15115	20.222177	19.8758
	Stand Dev	0.905601	0.952705	1.074433	0.675651
Obs.		917	173	156	104

As observed from the Table 1, all performance indicators of ROA, ROS and Prod increase with the increasing degree of foreign ownership, however, they decline for the all foreign-

owned firms. Summary statistics of our panel data provide us valuable insight into the nature of relationship between the degree of foreign ownership and corporate performance. All foreign firms do not perform as well as major foreign paid in capital firms. This may be caused of their little knowledge and know-how about the Turkish business environment both practically and legally. The empirical analyses are conducted with balanced panel data regressions using the least squares error estimator. Eviews 7SV software package is used to conduct the analyses.

In order to analyse the effect of share of foreign capital on firms' corporate performance, two different models are estimated.

The first estimated equation is:

(1) $Y_{it} = a_0 + a_1 Y_{i(t-1)} + a_2 AD_{it} + a_3 MinF_{it} + a_4 MajF_{it} + a_5 AF_{it} + a_6 Size_{it} + e_{it}$,

Y_{it} stands for our three corporate performance indicators ROA, ROS and Prod. Foreign ownership is controlled with dummy variables AD (all domestic owned), MinF (minority foreign owned), MajF (majority foreign owned), and AF (all foreign owned). AD is equal to 1 if there is no share of foreign ownership, and 0 otherwise; MinF is equal to 1 if the share of foreign ownership is positive but lower than 50%, 0 otherwise; MajF is equal to 1 if the share of foreign ownership is greater than or equal to 50% but lower than 100%, and 0 otherwise; and AF is equal to 1 if the share of foreign ownership is 100% foreign, and 0 otherwise. Size is included in the equation because of the belief that at different scales of firms performs differently. It is measured by the natural logarithm of net sales. Variable e_{it} covers the errors. In order to better evaluate the nature of relationship between foreign ownership and corporate performance, another equation is estimated:

(2) $Y_{it} = a_0 + a_1 Y_{i(t-1)} + a_2 F\%_{it} + a_6 Size_{it} + e_{it}$,

$F\%_{it}$ stands for the actual percentage of foreign capital of the firms.

4.RESULTS

Both estimates of Equation (1) and (2) are reported in the Table 2 for three measures of corporate performance of ROA, ROS, and Prod. As observed, the lagged variables of all corporate performance measures are positive and statistically significant for both equations, implying determination. As the foreign ownership is controlled with the dummy variables, it is observed that it is statistically significant for only major foreign capital and all foreign capital firms on the basis of only ROA. In other words, there is not a significant difference among all domestic, minor foreign capital, major foreign capital, or all foreign capital firms in our sample in terms of ROS, and Prod.

Table 2: Panel Regression Results

	ROA (1)	ROS (1)	Prod (1)	ROA (2)	ROS (2)	Prod (2)
Constant	0.029172	-0.332639	-124479.4	-0.038428	-0.651561	-166301.7
	(0.47235)	(-.825363)	(-2.095838)*	(-0.727561)	(-1.891535)	(-3.270938)
Lagged Variable (t-1)	0.562924	0.107347	0.631463	0.576529	0.112275	0.637207
	(26.52891)*	(4.306682)	(29.48222)*	(27.45008)*	(4.504673)*	(29.95713)*
All Domestic Capital	-0.040980	-0.360032	-48437.92			
	(-1.126149)	(-1.500616)	(-1.372254)			
Minor Foreign Capital	-0.061419	-0.383443	-55546.63			
	(-1.622743)	(-1.573240)	(-1.548083)			
Major Foreign Capital	-0.075956	-0.166820	-36322.34			
	(-2.06579)*	(-0.701419)	(-1.038153)			
All Foreign Capital	-0.081217	-0.290840	-50361.69			
	(-2.173461)*	(-1.176793)	(-1.383348)			
Foreign Holding (%)				0.000217	0.001296	31.64889
				(3.060566)*	(2.830346)*	(4.69534)*
Size	0.003833	0.040686	9624.640	0.003352	0.038491	9252.253
	(1.441226)	(2.339001)*	(3.735580)*	(1.266521)	(2.228506)*	(3.622136)*
R2	0.384275	0.33427	0.419042	0.377443	0.27056	0.416726
F-Statistics	138.6536	76.83175	159.4061	269.9965	82.38392	316.5062
Prob (F-Statistics)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
# of Observations	1350	1350	1350	1350	1350	1350

* Significant at %5 level.

For the other variables, Size is positive and statistically significant for all performance indicators for both equations, except for ROA. Since our sample is gathered from the top 500 industrial companies database in Turkey, deviation among firms' sizes is not substantial. As the actual percentage of foreign capital paid is included in the Equation (2) to better understand the link between foreign ownership and corporate performance, it is observed that Foreign Holding (%) variable has a positive and statistically significant effect for all performance indicators of ROA, ROS, and Prod. In parallel with the summary statistics of our observations, as the foreign capital paid in firm increases, the performance of the firm increases as well.

The overall results show that although there is a positive and statistically significant relationship between foreign ownership and corporate performance, firms with various degrees of foreign capital do not differ significantly from each other in terms of ROS, and Prod, but ROA.

5.CONCLUSION

In this study, a balanced panel of 270 firms among the top 500 industrial companies over the period of 2008-2012 is used in order to analyse the relationship between foreign ownership and corporate performance. When the means of the observations are analysed in terms of ROA, ROS, and Prod, it is realized that corporate performance measures increase as the degree of foreign capital increase up to a certain level. The increasing trend stops at wholly foreign firms. Wholly foreign firms do not perform as well as major foreign capital firms. Then, the significance difference is tested among four groups of firms with different degrees of foreign ownership on basis of corporate performance indicators. Except major foreign capital and wholly foreign capital firms on the basis of ROA, it is not observed any significant differences among firms with different degrees of foreign capital. However, there is empirical evidence that there exists a positive and significant relationship between a firm's degree of foreign ownership and its corporate performance. Even though our findings reveal a significant relationship between foreign ownership and corporate performance in Turkey, better performance does not seem to stem from just only foreign capital paid but maybe also components like growth rate and opportunities, age, capital intensity etc. associated with again foreign ownership.

REFERENCES

- Akimova, I., and G. Schwödiauer. (2004), "Ownership Structure, Corporate Governance and Enterprise Performance: Empirical Results from Ukraine", International Advances in Economic Research, 10(1), 28-42.
- Aitken, B., and A. Harrison. (1999), "Do Domestic Firms Benefit from Direct Foreign Investment? Evidence from Venezuela," The American Economic Review, 89(3), 605-617.
- Aydın, N., M. Sayım, and A. Yalama. (2007), "Foreign Ownership and Firm Performance: Evidence from Turkey", International Research Journal of Finance and Economics, 11, 103-110
- Azzama, I., J. Fouadb, and D. K. Ghosch. (2013), "Foreign Ownership and Financial Performance: Evidence from Egypt," International Journal of Business, 18(3).
- Barbosa, N., and H. Louri. (2005), "Corporate Performance: Does Ownership Matter? Comparison of Foreign and Domestic owned Firms in Greece and Portugal", Review of Industrial Organization, 27, 73-102.
- Blomström, M., and F. Sjöholm. (1999), "Technology Transfers and Spillovers: Does Local Participation with Multinationals Matter?", European Economic Review, 43, 915-23.
- Bastı, E. and N. Bayyurt. (2008), "Efficiency Performance of Foreign-Owned Firms in Turkey", Transformation in Business&Economics, Supplement C, Vol. 7.
- Bastı, E., N. Bayyurt, and A. Akın, 2011, "A Comparative Performance Analysis of Foreign and Domestic Manufacturing Companies in Turkey", European Journal of Economics and Political Studies, (2).
- Chhibber, P.K., and S.K. Majumdar. (1999), "Foreign Ownership and Profitability: Property Rights, Control, and the Performance of firms in Indian Industry," Journal of Law and Economics, 42(1), 209 - 238.
- Doms, M., and J.B. Jensen. (1995), "Comparing Wages, Skills, and Productivity between Domestically and Foreign-Owned Manufacturing Establishments in the United States," in Robert E. Baldwin, Robert E. Lipsey, and J. David Richardson (eds.), Geography and Ownership as Bases for Economic Accounting, Chicago, IL: University of Chicago Press.
- Douma S., Rejie G., Rezaul K. (2006), "Foreign and Domestic Ownership, Business Groups, and Firm Performance: Evidence From a Large Emerging Market"Strategic ManagementJournal, 27, 637-657.
- Erdoğan, A. İ. (2011), "Foreign-Owned Firms and Domestically-Owned Firms In Turkey: An Analysis of the Differentiating Characteristics", Journal of Money, Investment and Banking Issue 19.
- Greenway D., A. Guariglia, and Z. Yu. (2014), "The More the Better? Foreign Ownership and Corporate Performance in China", The European Journal of Finance, (20): 681-702.
- Karatas, A. (2005), "Performance of Direct Foreign Investments in Turkey", Ankara: Capital Markets Board of Turkey Publication, No: 185.

- Kimura, F. and K. Kiyota. (2007), "Foreign-Owned versus DomesticallyOwned Firms: Economic Performance in Japan," Review of Development Economics 11:31-48.
- Taymaz, E. and S. Özler. (2007), "Foreign Ownership, Competition, and Survival Dynamics", Review of Industrial Organization, (31): 23-42.

ECONOMETRIC ANALYSIS OF NATURAL DISASTERS' MACRO-ECONOMIC IMPACTS: AN ANALYSIS ON SELECTED FOUR OECD COUNTRIES

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Keywords	ABSTRACT
Economic growth, Macro-economy, Natural disasters, OECD, Time series analiysis	The aim of this study is to investigate the macro-economic impacts of the disasters occurring in 4 countries which were selected as members of the OECD between 2005 and 2014. As macro-economic indicators, industrial production index, inflation and unemployment were used. In order to investigate the macro-economic impact of disasters empirically, the estimation model of each variable was found using autoregressive moving average method (ARIMA), which is the analysis of time series, and dummy variable was added to this model. In addition, Augmented Dickey Fuller (ADF) and Phillips Perron (PP) tests, which are used for testing the stability of the series, were employed to be able to use autoregressive models. Considering the analysis results, it has been seen that the dummy variable is statistically significant for selected countries. This indicates that these countries provide increased production by increasing public spending in the context of disaster management after the earthquake. These results are also consistent with the literature on the economic impacts of natural disasters.
JEL Classification C10,G30,M10	

1. INTRODUCTION

Natural disasters are described as natural events which cause physical, economic and social losses on living and non-living things and affect daily life and human activities by disrupting totally or interrupting (Gündüz, 2009). Although natural disasters result from natural processes of Earth, their effects depend on human factor. Dimensions of damages take shape based on whether position of residential area is chosen appropriately, earthquake proof and resistant buildings are built; population density and efficiency of emergency rescue services. In other words human factor may have positive or negative impacts on results of any disaster (Laçiner and Yavuz, 2013).

In addition to deaths and woundings, disasters cause economic losses such as damages in infrastructure and superstructure, raise in unemployment ratio, raw material losses, production losses, increase in public spending within search and rescue and reconstruction periods and burden on public economy (Akar, 2013). Destruction resulted from disasters varies depending on characteristics of residential area, physical condition of

buildings, population density and disaster readiness. However natural disasters result in much more damage compared with disasters occurred at past because of the increase in global population, construction of new residential areas, unplanned urbanization, increase in global mobility, economies' getting more dependent on technology and climate change due to technological factors like greenhouse effect (Coppola, 2001; Atlı, 2006; Yılmaz, 2003).

Economic impacts of disasters take shape in different ways as direct, indirect and macro-economic. Direct impact can be defined as first aid and temporary accommodation costs, treatment, food and clothing costs, destruction in infrastructure and superstructure, goods and material losses, livestock and agricultural losses and damages in public and private institutions (Ergünay, 2002). On the other hand indirect impact is comprehensive and complex compared to direct impact. Production losses due to destructions in workplaces and facilities and service losses resulting from public and private institutions are examples of indirect impact. Furthermore macroeconomic indicators such as GDP, employment rate, inflation, external debt stock, production, etc. are affected by disasters. Macroeconomic effect resulting from the disaster is directly related with development level of countries. Impacts of disasters on developing countries are far more destructive while any significant impact is not observed in developed countries (Mechler, 2007).

GDP in developing countries falls within the year in which the disaster take place or one year later and then raises with increases in investments. Increase in public spending and decrease in taxation revenue contribute to budget deficit and cause deterioration in balance of trade. Intensity of disaster and also macroeconomic impact based on economic, social and political structure of the country where disaster occurs, change and long term impacts should be observed (Mechler, 2007). Although impacts of disasters on economic indicators are mostly negative, sometimes positive impacts are seen. These impacts are indirect ones rather direct (Erkan, 2010).   In this study, macroeconomic impacts of disasters that occurred in Canada, Chile, Greece and Turkey between 2004 and 2013, four OECD countries have been investigated. Natural disasters' impact on industrial production index, inflation and unemployment rate are within the scope of the study. Primarily, macroeconomic impacts of natural disasters were observed with literature review. Then what kind of impact natural disasters have on certain macroeconomic variables has been analyzed. Considering the analysis results, it has been seen that the dummy variable is statistically significant for selected countries. This indicates that these countries provide increased production by increasing public spending in the context of disaster management after the earthquake. These results are also consistent with the literature on the economic impacts of natural disasters. In fact, according to the literature, disasters cause adverse effects in production as soon as they occur in the short term; however, they create a positive impact on production as a result of the public expenditure made after the disaster in the long term.

2.LITERATURE REVIEW

Lazzoroni and Bergeijk (2013) researched which factors significant or non-significant impacts of disasters in countries where they occur are related by investigating empirical studies which were published in recent years and focused on macro-economic impacts of

natural disasters. According to the result of the study, the population is the main factor affecting the intensity of disasters.

Cunado and Ferreira (2014) investigated the macroeconomic impacts of natural disasters specific to flooding. Flood that occurred in 135 countries between 1985 and 2008 were used as data in this study. According to the results of the study, flooding has positive impacts on economic growth. This positive impact is observed especially in agriculture economy. Furthermore it affects GDP per capita in a positive manner. However this impact is limited to developing countries and average floods. In developing countries floods have positive impacts on both agricultural and non-agricultural growth.

Padli and Habibullah (2009) investigated the relationship between death toll due to natural disasters in ten Asian countries between 1970 and 2005 and economic development, land area, population and years of schooling. According to the results of the study, there exists an inverse proportion between economic development and disaster resistance. So countries with low level of development are more disaster resistant while highly developed countries are less disaster resistant. As the level of education raises, death toll because of disaster decreases and larger population increases death toll. On the other hand larger land area decreases the death toll.

According to Noy (2009), when compared with bigger economies, smaller economies are more fragile against natural disasters. A disaster of similar magnitude affects a developing country more significantly than a developed one. Findings in Noy's research indicates that factors such as higher literacy rate, better institutions, higher per capita income, higher degree of openness to trade and a strong government are important in preventing negative impacts of natural disasters on macroeconomic indicators. Furthermore, changes in amount of foreign exchange reserves, domestic credit levels and rate of increase in per capita income are the financial factors that affect fragility of countries against disasters.

Toya and Skidmore (2007) researched whether human and economic losses could be decreased with economic development. According to the results, economicdevelopment is not enough alone in order to decrease damages. Together with economic development, increase in level of education, raise in disaster awareness, financial sector's getting stronger and local governments' being allowed to have higher power decrease the damages of disasters.

Kim (2010) investigated the economic impacts of disasters in the long run in his study. There is a positive relationship between disasters and long-run economic growth. This study interpreted through which channels disasters affect economic growth.

Akar (2013), researched on the effects of natural disasters on public economy and macro economy in Turkey specific to earth quakes which are disasters occurring most frequently and harms most. According to findings of the research, disasters cause decrease in GDP, losses in stocks due to uncertainty and deterioration in balance of trade because of increase in imports and decrease in exports. Moreover natural disasters affect public economy by resulting in increase in public spending and decrease in taxation revenue in countries where they take place.

Results of the study in which Karagöz (2007) investigated the negative impacts of the 1999 Marmara Earthquake are parallel with ones of other studies. According to this, the 1999 Marmara Earthquake decreased GDP while increasing public spending and domestic debt stock.

Akturk and Albeni (2002) investigated how the 1999 Marmara Earthquake affected the economic performance of Turkey by comparing economic pre-economic and post-economic indicators. In the study, the earthquake's economic impacts were discussed by classifying into 7 groups which were impacts on economic infrastructure, manufacturing sector, agricultural sector, exports and imports, tourism sector, education and health of the earthquake and fiscal impacts of the earthquake. According to the results, economic indicators after the earthquake are worse than ones before the earthquake. However it cannot be claimed negative indicators are utterly originated from the earthquake.

Tourism sector is one the sectors indirectly affected by disasters. Tours and reservations cancelled due to disasters and tourists' leaving the country over fear of disaster have negative influences on the sector. The sector is affected by disasters not only in the disaster area but also all over the country unlike other sectors. Tourist planning to visit the country before the disaster cancelled their plans without taking in which area the disaster takes place (Yavuz, 2014).

Murat et all. (2013) discussed whether number of tourists from different nations is influenced by economic crisis, terrorist acts and natural disasters in their study. According to the findings, especially tourists visiting Australia, Iran and Russia are under permanent effect of these kinds of crisis.

3.DATA AND METHODOLOGY

Reviewing macroeconomic impacts of disasters empirically, the relationship between disaster periods and macroeconomic indicators has been tested by defining dummy variable for disaster periods. Inflation, industrial production index and unemployment data of Canada, Chile, Greece and Turkey have been worked on as macroeconomic indicators. The reason that these four countries have been chosen are their being members of the OECD. Dummy variable has been added to the expected model of each macroeconomic variable which has been obtained with autoregressive integrated movingaverages (ARIMA) method, time series analysis of each indicator.

Post-disaster period has been defined as "1" while pre-disaster period as "0". Series should be stationary in order to use autoregressive models. Augmented Dickey Fulley (ADF) and Phillips Perron (PP) tests have been employed for testing of stationarity.

3.1.ADF Test

It is important that series must be stationary in the studies where time series data are used. In time series analysis, the result of the constituted regression is not realistic when working with non-stationary series and the use of non-stationary series lead to spurious relationship between the variables subjected to regression. In this case, calculated standard t statistics and R^2 values come out higher than they are. Even if there is no

meaningful relationship between the variables, it seems that there are. Therefore, stationarity of the series should be tested first, when working with the series. Furthermore, a temporary shock occurred in non-stationary series cause permanent memory. Hence, this inhibits series to approach a certain value i.e. its stationarity. That is why; stationarity analysis of the series should be conducted at the first step when working with time series (Dickey and Fuller, 1979).

If the mean, variance and co-variance of a time series remain stable during the time, it can be said that the series is stationary. The terms of being stationary of any Yt series can be summarized as follows:

Constant arithmetic mean	: $E(Y_t)=\mu$	(1)
Constant Variance	: $Var(Y_t)=E(Y_t-\mu)2=\sigma2$	(2)
Co-variance related to delay distance	: $\gamma k=E[(Y_t-\mu)(Y_{t-k}-\mu)]$	(3)

The difference between two consecutive values in a time series does not originate from the time itself, but originated from the time interval only. Because of this, the average of the series does not change by the time. However, most of the time series in real world are not stationary, so the average of series changes by time. In order to put time series in an appropriate model, these series should be made stationary.

It is said that the series is not stationary when one of these conditions are not provided. Non-stationary series include unit root. The number of unit root in a series is equal to the difference needed to be taken until the series becomes stationary. If Yt series becomes stationary when first difference is taken, the series is called as first order stationary and shown by I(1). Generally, if the series becomes stationary when the difference is taken d times, it is called order-d stationary and shown by I(d) (Madloola, 2002).

There are two ways to understand whether a series is stationary or not (Gujarati, 1995)
    1- Examination of correlogram of series,
    2- Application of unit root tests.

Unit root test is the most valid method to determine whether a variable is stationary or the stationarity order of a variable. While doing unit root testing by using ADF (Augmented Dickey Fuller) statistics, the main idea is making error term successive independent. By this method, unit root testing is researched with these operations.

$Y_t = \rho Y_{t-1} + \Sigma b_i \Delta Y_{t-I} + \varepsilon_t$ (4)
without constant and trend,

$Y_t = \alpha + \rho Y_{t-1} + \Sigma b_i \Delta Y_{t-I} + \varepsilon_t$ (5)
with constant and without trend,

$Y_t = \alpha + \rho Y_{t-1} + \delta t + \Sigma b_i \Delta Y_{t-i} + \varepsilon t$ $i= 1,2,…,k$ (6)

By finding regressions with constant and trend, ADF (AugmentedDickey Fuller) statistics are obtained together with them (Tarı, 2011). Calculated ADF statistics are compared with

critical values developed by MacKinnon (1991). If the absolute value of ADF statistics is less than the absolute value of MacKinnon critical values according to various significance levels, it is inferred that the series is not stationary, but if it is greater, then it means that the series is stationary.

Dickey-Fuller Test assumes that error terms are statistically independent and they have constant variance. While using this methodology, it is needed to be sure that there is no correlation between error terms and they have constant variance.

3.2.PP Test

Phillips and Perron (1988) enlarged the Dickey-Fuller's assumption related with error term. In order to understand it better, this regression is taken into consideration.

$$Yt = a0* + a1*yt-1 + \mu t \tag{7}$$
$$Yt = a0* + a1* yt-1+a2* (t-T/2) + \mu t \tag{8}$$

Here, T stands for number of observation and μt stands for distribution of error terms. Expected mean of this error term is equal to zero. However, serial correlation between error terms or assumption of homogeneity is not needed here. In this respect, independence and homogeneity assumptions of Dickey-Fuller test is accepted as weak dependence and heterogeneous distribution of abandoned error terms in Phillips-Perron (PP) test. Thus, Phillip-Perron did not consider the limitations about assumptions of error terms while developing Dickey-Fuller t statistics (Enders, 2004). In this study, both ADF and PP unit root tests which support each other in terms of assumptions were used together.

3.3.ARIMA Model

The most important aim of the econometric analysis is to predict the future values of variables, in another word forecasting. One of the common ways of stationary time series modeling is "auto regressive integrated moving average" or simply ARIMA method. This approach which was developed by George Box and Gwilym Jenkins is also called Box – Jenkins (BJ) method. The main point of Box-Jenkins method is to explain time series with only their own past values and stochastic error term. In the method generally denoted as ARIMA (p,d,q) , parameters p, d, and q refer to the auto regression process, order of stationarity and moving average parts of the model respectively. If autocorrelation function of the examined series decreases exponentially and partial autocorrelation function shows significant bulges belongs to p lags, then the model be AR(p), otherwise MA(q). Both autocorrelation and partial autocorrelation function decrease exponentially, the model will be determined as ARIMA (p,q) (Bilgili, 2002). When the correlogram of the series is studied, it has been seen that the values on third lags in autocorrelation and partial autocorrelation functions stayed out of band. In this case, it has been decided that the model is ARIMA (3,1,3) and AR and MA coefficients in constructed model were found significant within 1% error margin and it has been seen that no value was found out of the band in the residuals of the model. The general demonstration of the model is as below:

$$Y_t = a_o + a_1Y_{t-1} + a_2Y_{t-2} + ...+ a_n Y_{t-n} + u_t + b_1u_{t-1} + ... + b_pu_{t-p}$$

4.RESULTS

Whether they were stationary series were tested by Augmented Dickey Fuller (ADF) and Phillips Perron (PP) tests and analysis results were summarized in Appendix 1. Whether they were stationary series in terms of level was examined by three different regression models of ADF and PP tests including "constant term", "constant term and trend" and "without constant term and trend (none)". When examining the results in the table, it is seen that all series are not stationaryin terms of level. Looking at the series of graphs, since series might include the impact of trends, trend models were estimated for each series. Except for the unemployment series for Greece and Turkey, trend effect was seen in all other series. It was seen that the series irrespective of trend effect are stationaryfrom the point of level. Variables with no trend effect have been made stationary by taking the difference of the first order. The most proper ARIMA model for series whose stability conditions was identified, was determined according to Information Criteria. Dummy variable related to disasters added to determined model for each macro-economic indicators and probability values of the coefficients and coefficients of the models were summarized in Table 2, 3 and 4.

Table 2: ARIMA Model Analysis Results of the Inflation Data

Coefficients	Canada	Chile	Greece	Turkey
b0	0,028	0,02114	-0.837864	0.174270
	(0,87)	(0,97)	(0,54)	(0,54)
AR(1)	0.485980	1.440530	1.926784	-0.132794
	(0,00)*	(0,00)*	(0,00)*	(0,00)*
AR(2)	-	-0.501319	-1.818221	-0.267161
		(0,00)*	(0,00)*	(0,00)*
AR(3)	0.802578	-	0.840010	0,428526
	(0,00)*		(0,00)*	(0,00)*
AR(4)	-0.629067	-	-	-
	(0,00)*			
MA(1)	0.586006	-	-1.352323	1.196333
	(0,00)*		(0,00)*	(0,00)*
MA(2)	0.450299	-	0.953888	1.314127
	(0,03)**		(0,00)*	(0,00)*
MA(3)	-0.462772	-	-	0.598465
	(0,01)*			(0,00)*
DUMMY	-0.079497	0.162752	-0.094894	0.543005
	(0,58)	(0,21)	(0,62)	(0,03)**

Note: Values in parentheses are the probability values of coefficients. "*" 1%,"**" expresses significant coefficients according to 5% level of significance.

Looking at the results in table 2, it is seen that the coefficient of dummy variable is statistically significant for only Turkey. Being positive coefficient and statistically significant of dummy variable identified as "0" for the 1-year period before the natural disaster which have occurred in Turkey between the years 2005-2014 and has caused great damage and identified as "1" for after the 1-year period implies that a significant increase of inflation occurred in post-disaster period compared to the previous period. Coefficient of the

dummy variable is quite small, negative and statistically insignificant for Canada and Greece. Coefficient realized larger and positive for Chile. Although the coefficient was not found statistically meaningful, positive sign of coefficient for Chile indicates anupward trend in inflation for the period after the disaster. Equations in table 3 shows the relationship between the industrial production index of Canada, Chile, Greece and Turkey and dummy variable related to disasters. When we look at the results of the analysis, dummy variable is considered to be statistically significant for Canada, Chile and Greece. While coefficients for Canada and Greece have been positive, they have been negative signed for Chile. According to these results we can say that industrial production in Chile in the period after disaster decreased compared to the period before disaster. However, the positive coefficient value of Canada and Greece implies that these countries have provided production increase by increasing their public expenditure. These results match up with the literature about economic effects of natural disasters. In fact, in the literature, it is stated thatwhen they occur disasters cause adverse effects in production in the short term, but in the long run they have positive impacts on production due to post-disaster public spending. In this case, it can be said that such an impact was observed in Canada and Chile, within one year from the disaster.

Table 3: ARIMA Model Analysis Results of the Industrial Production Index Data

Coefficients	Canada	Chile	Greece	Turkey
b0	0.059698	0.862725	-0,209821	0.136657
	(0,96)	(0,3558)	(0,17)	(0,63)
AR(1)	0.941357	0,511924	1,062053	0.348808
	(0,01)*	(0,00)*	(0,00)*	(0,00)*
AR(2)	-0.794950	0,200428	0,209309	1.294611
	(0,00)*	(0,00)*	(0,04)**	(0,00)*
AR(3)	1.138684	-	-0,343134	-
	(0,00)*		(0,00)*	
AR(4)	-0.229277	-	-	-0.740960
	(0,00)*			(0,00)*
AR(6)	-0.211131	-	-	-
	(0,00)*			
MA(1)	-	-	-0,984043	0.443512
			(0,00)*	(0,00)
MA(2)	0.994990	-	-	-0.790826
	(0,00)*			(0,00)*
MA(3)	-	-	-	-

MA(4)	-	-	-	0.264176
				(0,00)*
DUMMY	+0.664207	-6,16253	1,917065	0.254878
	(0,01)*	(0,00)*	(0,02)**	(0,89)

Note: Values in parentheses are the probability values of coefficients. "*" 1%,"**" expresses significant coefficients according to 5% level of significance

Table 4: Analysis of Unemployment Data with the ARIMA Model

Coefficients	Canada	Chile	Greece	Turkey
b0	-0.015438	0.070760	0.272975	0.219555
	(0,55)	(0,82)	(0,11)	(0,18)
AR(1)	1.915892	0.486688	1.226141	-0.155573
	(0,00)*	(0,00)*	(0,00)*	(0,00)*
AR(2)	-0.940720	0.555509	0.250082	-0.558564
	(0,00)*	(0,00)*	(0,00)*	(0,00)*
AR(3)	-0.984750	-	-	0.710840
	(0,00)*			(0,00)*
AR(4)	-	0.210669	-	0.156169
		(0,03)**		(0,08)***
AR(5)	-	-	-	0.615506
				(0,00)*
MA(1)	-0.984750	1.12245	-0.832441	0.601908
	(0,00)*	(0,00)*	(0,00)*	(0,00)*
MA(2)	-	0.954933	-	1.124684
		(0,00)*		(0,00)*
MA(3)	-	-	-	-0.227805
				(0,00)*
MA(4)	-	-	-	-0.682558
				(0,00)*
DUMMY	0.012964	-0.20362	-0.090551	-0,021117
	(0,86)	(0,00)*	(0,40)	(0,84)

Note: Values in parentheses are the probability values of coefficients. "*" 1%,"**" expresses significant coefficients according to 5% level of significance.

Equations in table 4 shows the relationship between unemployment and dummy variable related to disasters for Canada, Chile, Greece and Turkey. According to the analysis results dummy variables were significant for only Chile. The negative coefficient, namely the decrease in unemployment in the post-disaster period, is a remarkable situation. This is a result of the loss of lives occurred in the aftermath of a disaster. In fact, based on the results although it is not statistically significant, coefficient for Greece and Turkey is seen to be negative.

5.CONCLUSION

Natural disasters are the events that cannot be prevented to occur. The occurrence of natural disasters cannot be prevented but minimizing the impacts is of course possible. Besides the physical and social effects, one of the biggest impacts of natural disasters is macroeconomic effect. In this study, the econometric evidence is presented on that disasters have effects on economic indicators. By summarizing analysis results of the generated models in the study, those are as follow seen that: increase in inflation after the disaster, economic growth resulting from the increase in public spending or decrease in production took place and disasters caused loss of labor force arising from deaths.

Macroeconomic impacts of disasters vary depending on countries. One of the most important reasons of these differences is about disaster readiness. If every country takes precautions according to the types of expected natural disasters, negative impacts can be decreased. This is a well-known but neglected fact. Measures that should not be neglected to prevent bottlenecks experienced in the aftermath of disasters are that priority should be given to measures that could prevent life losses; fund resources required for post-disaster period should be madeready in the pre-disaster period.

REFERENCES

- Akar, S., 2013, "The Impact of Natural Disasters on Public Finance and Macroeconmy: Turkey Case", *Journal of Management and Economic Research*, 21, 185-206.
- Aktürk İ. and M. Albeni, 2002, "Doğal Afetlerin Ekonomik Performans Üzerine Etkisi: 1999 Yılında Türkiye'de Meydana Gelen Depremler ve Etkileri", *Süleyman Demirel Üniversitesi İktisadi ve İdari Bilimler Dergisi*, 7(1), 11-18.
- Atlı, A., 2006, *Afet Yönetimi Kapsamında Deprem Açısından Japonya Ve Türkiye Örneklerinde Kurumsal Yapılanma*, Ankara: Asil Yayın.
- Bilgili, F., 2002, "Var, Arıma, Üstsel Düzleme, Karma ve İlave-Faktör Yöntemlerinin Özel Tüketim Harcamalarına Ait Ex Post Öngörü Başarılarının Karşılaştırılması", Dokuz Eylul University Faculty of Economics and Administrative Journal, 17(1), 185-211.
- Coppola, D. P., 2011*, Introduction to International Disaster Management*, (2nd ed.), Burlington: Butterworth – Heinemann.
- Cunado, J. and S. Ferreira, 2014, "The Macroeconomic Impacts of Natural Disasters: The Case of Floods", *Land Economics*, 90(1), 149-168.
- Dickey, D. A. and W. A. Fuller, 1979, "Distribution of the Estimators for Autoregressive Time Series with a Unit Root", *Journal of the American Statistical Association*, 74, 427–431.
- Enders, W., 2004, *Applied Econometric Time Series*, New York: John Wiley & Sons.
- Ergünay, O., 2002, *Afete Hazırlık Ve Afet Yönetimi*, Ankara: Türkiye Kızılay Derneği Genel Müdürlüğü Afet Operasyon Merkezi.
- Erkan, E. A., 2010, *Afet Yönetiminde Risk Azaltma Ve Türkiye'de Yaşanan Sorunlar,* Ankara: DPT.
- Gujarati, N., 1995, *Basic Econometrics*, New York: McGraw-Hill.
- Gündüz, İ., 2009, *Dünyada ve Türkiye'de Afet Yönetimi*, İstanbul: ErdemYayınları.
- Karagöz, K., 2007, "1999 Marmara Depremlerinin Ekonomik Etkileri: Ekonometrik Bir Yaklaşım", *TMMOB Afet Sempozyumu*, 5-7 Aralık, Ankara, 423-432.
- Kim, C. K., 2010, "The Effects of Natural Disasters on Long-Run Economic Growth", *The Michigan Journal of Business*, 41, 15-49.
- Laçiner, V. and Ö. Yavuz, 2013, "Van Earthquake in Case, Post Disaster Reliefs And Their Legal Framework", *Dicle University Social Science Journal*, 5, 114-135.
- Lazzaroni, S. and P. Bergeijk, 2013, Naturel Disasters Impact, Factors of Resilience and Development: A Meta-Analysis of the Macroeconomic Literature, *ISS Working Paper- General Series 554,* The Hague: International Institute of Social Studies of the Erasmus University Rotterdam (ISS).
- Mackinnon, J. G., 1991, "Critical Values for Cointegrationtests" In Engle R.F. and Granger, C.W.J (Eds.), *Long-Run Economic Relationships: Readings in Cointegration*, Oxford University Press, 267-276.
- Madloola, N. A., R. Saidura, M. S. Hossaina and N. A. Rahim, 2011, "A Critical Review on Energy Use And Savings in the Cement Industries", *Renewable and Sustainable Energy Reviews*, 15, 2042–2060.

- Mechler, R., 2007, "Doğal Afetlerin Makroekonomik Etkileri", In Erkan N. et al. (Eds.), *Afet Risk Yönetimi Risk Azaltma ve Yerel Yönetimler*, İstanbul: Beta Basım.
- Murat, S., S. Şener and V. Yılancı, 2013, "İktisadi Krizler, Doğal Afetler, Terör Faaliyetleri Türkiye'ye Gelen Turistler Üzerinde Etkili Mi?", *İktisat Fakültesi Mecmuası,* 63, 1-15.
- Noy, I., 2009, "The Macroeconomic Consequances of Disasters", *Journal of Development Economics,* 88, 221-231.
- Padli, J. and M. S. Habibullah, 2009, "Natural Disaster Death and Sosio-Economic Factors in Selected Asian Countries: A Panel Analysis", *Asian Social Science,* 5(4), 65-71.
- Philips, P.C.B. and P. Perron, 1988, "Testing for a Unit Root in Time-Series Regression", *Biometrica*, 75, 335-346.
- Tarı, R., 2011, *Ekonometri*, Kocaeli: Umuttepe Yayınevi.
- Toya, H. and M. Skidmore, 2007, "Economic Development and the Impacts of Natural Disasters", *Economics Letters,* 94, 20-25.
- Yılmaz, A., 2003, *Türk Kamu Yönetiminin Sorun Alanlarından Biri Olarak Afet Yönetimi*, Ankara: Pegem A Yayıncılık.
- Yavaş, H., 2005, *Doğal Afetler Yönüyle Türkiye'de Belediyelerde Kriz Yönetimi*, Ankara: Orion Yayınevi.
- Yavuz, Ö., 2014, *Afetler Sonrası Yapılan Yardımlar ve Hizmetler*, İstanbul: İdeal Kültür Yayıncılık.

Appendix 1: Unit Root Test Results

		ADF			PP		
		CONSTANT TERM	CONSTANT TERM AND TREND	NONE	CONSTANT TERM	CONSTANT TERM AND TREND	NONE
Canada (CA)	Inflation	-1,19(-3,60)	-3,58**(-3,58**	3,78(-3,62*)	-1,19(-3,33**)	-3,3(-3,30***)	3,74(-3,34*)
	Industrial production	-1,86(-2,82**	-0,75(-2,83)	-0,32(-2,83*)	-1,64(-2,32)	-1,31(-2,29)	-0,38(-2,33**)
	Unemployment	-1,25(-2,23)	-1,41(-2,23)	-0,25(-2,24**)	-1,47(-2,74***)	-1,62(-2,73)	-0,2(-2,75*)
Chile	İnflation	-1,25(-2,40)	-2,19(-2,38)	2,96(-2,41**)	-1,11(-2,59***)	-1,89(-2,21)	3,59(-2,26**)
	Industrial production	-2,14(-6,61*)	-2,7(-6,57*)	0,6(-6,64*)	-2,62(-6,62*)	-3,64(-6,58*)	0,89(-6,65*)
	Unemployment	-1,58(-1,83)	-1,83(-1,79)	-1,13(-1,85***)	-1,49(-1,79)	-1,77(-1,74)	-1,21(-1,81***)
Greece	İnflation	-1,58(-2,45)	-0,69(-2,01)	-1,04(-2,54**)	-1,54(-4,66*)	-3,9(-4,67*)	2,64(-4,69*)
	Industrial production	-0,02(-4,29*)	-2,39(-4,28*)	-2,02(-4,31*)	-0,18(-8,16*)	-3,61*(-8,12*)	-1,94**(-8,19*)
	Unemployment	1,75(-3,16**)	-1,53(-3,17**)	3,01(-3,18*)	2,03(-8,01*)	-1,45(-8,02*)	3,55(-8,03*)
Turkey	İnflation	0,95(-4,78*)	-3,48**(-4,76*)	7,92(-4,81*)	3,18(-3,27**)	-2,62(-3,25***)	18,22(-3,29*)
	Industrial production	-0,85(-2,79*	-2,07(-2,75)	1,41(-2,81*)	-2,87(-8,62*)	-6,71*(-8,59*)	1,33(-8,65*)
	Unemployment	-1,82(-4,56*)	-1,84(-5,81*)	-0,37(-2,66*)	-1,55(-4,37*)	-1,58(-5,79*)	-0,22(-3,38*)
Critical Values	**1%**	**-3,49**	**-4,05**	**-2,58**	**-3,49**	**-4,05**	**-2,58**
	5%	**-2,89**	**-3,45**	**-1,94**	**-2,88**	**-3,45**	**-1,94**
	10%	**-2,58**	**-3,15**	**-1,61**	**-2,58**	**-3,15**	**-1,61**

Note: Values in parentheses are the values related series irrespective of trend. Because of unemployment series don't include trend effects for Greece and Turkey, the values in parentheses which are related to that series are unit root test results for the first-degree difference. "*", "**" and "***" symbols respectively represent significant coefficients according to significance levels of 1%, 5% and 10%.

THE MEDIATING ROLE OF LEADERSHIP STYLES ON THE ORGANIZATIONAL CITIZENSHIP BEHAVIOR AND INNOVATIVENESS RELATIONSHIP

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ABSTRACT

This study focuses on the relationships among the organizational citizenship behavior, leadership behavior and innovativeness. The relationships among the three dimensions of leadership behavior-*change oriented leadership, task oriented leadership, relation oriented leadership-*, five dimensions of organizational citizenship behavior (OCV)- *altruism, courtesy, civic virtue, conscientiousness, sportsmanship-*, and innovativeness have been examined in details. Afield survey using questionnaires was conducted in that survey. The obtained data from the questionnaires are analyzed through the SPSS 16.00 Statistical Packet Programme. Factor analysis, reliability analysis, correlation and hierarchical regression analyses are used to evaluate the data. Analyses results revealed change oriented leadership mediates effect of organizational citizenship behavior on innovativeness.

1.INTRODUCTION

Effective organizations have employees who undertake responsibilities beyond their formal responsibilities and who could make sacrifices in order to fulfill a task successfully. Although these behaviors are not based on an oral or written requirement, they make a significant contribution to successful functioning of the organization (DiPaola and Hoy, 2005). These behaviors which go beyond the traditional behaviors required by the organization are generally called organizational citizenship behavior (OCB). These behaviors include helping other employees in work-related matters, accepting them without problems, not making complaints about temporary problems, contributing to keeping the workplace clean and tidy, speaking highly of the organization, and preserving organizational resources (Bateman and Organ, 1983). Researchers who investigated the precursors of OCB have associated it with concepts such as job satisfaction (Bateman and Organ, 1983; Koys, 2001; Yafang and Shih-Wang, 2008); perception of organizational justice (Organ and Ryan, 1995; Van Dyne, Graham and Dienesch, 1994), personality traits and leadership (Farh, Podsakoff and Organ, 1990). Leadership is one of the most important precursors of OCB because of its both direct and indirect effect on OCB (Nguni, Sleegers and Denesen, 2006). There is a strong connection between leadership and tendency to show OCB, and in this process the exchange between leaders and each employee is as important as leadership styles (Podsakoff et al. 1996). Leader's change-oriented behavior is important in determining employees' information about their organization (LaPolice, 2002).

Enterprises operate in ever changing and developing competitive environment. In this ever changing and renewing environment, managers have become responsible for fostering organizational learning, developing entrepreneurial activities, and implementing strategies that take into account both competitors and customers. Leaders play a primary role in fostering the innovative potential of an organization by deciding on successful creation of knowledge and putting it into implementation, and by promoting the suitable medium for it (Kanter, 1983; Van de Ven, 1993).   In this scope, OCB, leadership, and innovation are considered to be intermingled concepts, and this study will investigate the relationships among organizational citizenship behaviors, leadership styles, and innovativeness in firms.

2.LITERATURE REVIEW

a.Organizational Citizenship Behavior

Organizational Citizenship Behavior means that employees go beyond the formal rules determined by the organization and perform more than required from them. What makes organizational citizenship behavior significant for the organizations lies in the idea that "for healthy and smooth functioning of an organization, coordination between organization members in sharing information is required" (Barnard, 1938). Katz underlines the significance of helping and coordinative behavior which adds positively to the operations of the organization (Katz, 1964). In this context, organizational citizenship behaviors fall into the category of behaviors which contribute positively to the organization, exceeding the normal requirements for the job. Employees show these behaviors willingly. Katz and Kahn assert that in the provision of organizational effectiveness and continuity, employees should be willing to perform innovative and sincere behaviors that go beyond their predefined roles (Katz&Kahn, 1978). According to Organ (1988), organizational citizenship behavior represents an individual's behaviors which improve the operations of an organization "as a whole". For Greenberg and Baron (2000), organizational citizenship behavior occurs when an employee goes beyond and performs more than what was formally required by the organization (Greenberg &Baron, 2000). Organ (1988) defines organizational citizenship behavior as "individual behavior that is discretionary, not directly or explicity recognized by the formal reward system and that in the aggregate promotes the effective functioning of the organization". On the other hand, Motowidlo (1993) asserts that contextual performance which shows resemblance to organizational citizenship behaviors is the maintenance and improvement of the psychological and social environment that supports job performance. Organizational citizenship behaviors include constructive behaviors which employees generally show in order to improve the performance and effectiveness of the organization such as supporting the objectives and missions, holding organizational interests above personal interests, bringing innovation to the organization. With this scope, organizational citizenship behavior goes beyond the conventional performance-boosting behavior and covers occupational behaviors which are required for long-term success and is studied with this sense. It can be defined as behavior which includes positive and extra-role behavior at employee's discretion which regulates the harmony of work, and avoidance from negativities. Organ (1988) classifies those behaviors into 5 categories: altruism, conscientiousness, sportsmanship, courtesy, and civic virtue.

Altruism: Organ (1988) defines altruism as all discretionary behaviors of the employees in the form of helping other members of the organization in their specific tasks or in organizationally relevant problems. At the heart of this behavior lies coworkers' sense of helping each other. Altruistic behaviors help develop voluntary collaboration among work groups in the organization (Organ, 1988).

Civic Virtue: The dimension of civic virtue includes development of and support for organizational policies, and organization members' involvement in the operations (Organ, 1966). It involves total organizational commitment, and macro-level interest in the organization (Podsakoff, 2000). When considered as provision of support for organizational development, civic virtue includes having a say at personal discretion, suggesting solutions to problems, participation in the decisions, and making constructive suggestions to improve unit functions (Bommer & Lilliy, 1999). It involves expressing opinions clearly and encouraging other colleagues to do so (Organ, 1988). It is keeping pace with the developments in the organization, following closely the changes in the organization and active involvement in other's adopting changes (Ozen İşbaşı, 2000).

Conscientiousness: It is defined as voluntary behaviors shown by the organization members that go beyond the minimum roles required from them in certain matters related to the internal order of the organization such as attendance to work, punctuality, and protection of resources. (Organ,1988).

Sportsmanship: Organ (1988) defines sportsmanship as the ability to tolerate, resist, and prevent prostration resulting from unavoidable negativities and hardships arising from work. Sportsmanship is further defined as the behavior of tolerating grievances and annoying issues in organizational life without protest and complaint (Schnake & Dumler, 2003). Individuals who show sportsmanship behavior do not complain when things do not go well in the organization and they take on a positive attitude.

Courtesy: Courtesy refers to continuous interaction among organization members, who work for shared purposes of the organization, and collective, positive behaviors such as communicating with the other members the work accomplished, and decisions made. Creating an environment in which all parties affected by decisions could contribute to the decision-making process will open channels for required communication which is vital (Bingöl, 2003).

b.Leadership

Leadership has been defined in terms of traits, behaviors, influence, interaction patterns, role relationships, and occupation of an administrative position (Yukl, 2002;2). There is no consistency on the definition of leadership in literature because researchers define it according to their individual perspectives and the aspects of the phenomenon of most interest to them. After a comprehensive literature review, Stogdill (1974;259) concluded that "there are almost as many definitions of leadership as there are persons who have attempted to define the concept", which supports the previous statement. Different research disciplines revealed different taxonomies. So, there has been astonishing number of taxonomies on leadership behavior (see Yukl, 2002; Yukl et al., 2002; Bass, 1990; Dienesch and Liden, 1986). While so many leadership behavior description and taxonomies have been found in the literature (Lindel and Rosenqvist, 1992; Quinn, Faerman, Thompson and McGratth, 1996; Hooijberg and Choi, 2000;), Yukl's Leadership Behavior Taxonomy (LBT) model is brought in the forefront (Strang, 2007). Yukl (2002) proposed a three-dimensional leadership behavior model by adding "change-oriented leadership" to "task-oriented leadership" and "relationship-oriented leadership" which were generally proposed by behavioral leadership schools.

Change-oriented Leadership: Change-oriented leadership is directed towards making strategic decisions, adapting to surrounding change, increasing flexibility and innovation, making drastic changes and innovations in products, services, and processes, and covers the following behavior sets (1) intervention to organization culture (2) formation of vision, (3) implementation of changes, (4) boosting innovation and learning (Yukl, 2002).

Task-oriented Leadership: Task-oriented leadership is related to the behaviors shown in order to effectively use human resources and material, and enable secure and orderly performance of operations. Yukl (2002) states that with task-oriented leadership gives rise to certain (1) planning, (2) clarifying and (3) monitoring behaviors.

Relationship-oriented Leadership: Relationship-oriented leadership is related to the development of behaviors which foster relationships between people, increase teamwork, boost job satisfaction of subordinates, and ensure integration with the organization and (1) supporting, (2) developing, and (3) recognizing behaviors form the basis of relationship-oriented leadership (Yukl, 2002).

c.Innovativeness

The role of innovativeness in the process of entrepreneurship was first considered by Schumpeter (1934). Schumpeter (1934) calls it creative destruction when new wealth is created as a result of the destruction of current market structures with the launch of new products or services which lead the current company to form or develop into new companies. The main action in this process, namely entrepreneurship, signifies the competitive entry into market of innovative "new combinations" which ensure a dynamic evolution in economy (Schumpeter, 1934). Therefore, innovativeness is on the foreground as an important element which is employed in defining entrepreneurship (Lumpkin ve Dess, 1996).

Innovativeness reflects the tendency of a firm to engage in and support new ideas, novelty, experiments, and creative processes which may result in new products, services and technological processes (Lumpkin ve Dess, 1996). The firm may incorporate innovation in a continuum of activities from launching a new product line to wishing to experiment with a new advertising method or wishing to become pioneers in developing new products and technology (Lumpkin ve Dess, 1996).

As Andersen (2001) indicates, organization performance depends on the firm's self-appraisal in terms of profitability and growth relative to its competitors (Dess and Robinson, 1984) and the level of innovation in the

organization. Innovation means being the first or early user of a system, tool, process, product or service, which is vital for companies that would like to survive in a medium of increased competition (Price, 1972; Damanpour, 1991; Scott ve Bruce, 1994).

d.Development of Hypotheses

It is inevitable that a competitive culture should be built in an organization where competition in the market increased, customer expectations escalated, and restricted time is left to provide new products of services. In this ever changing and renewing environment, managers have become responsible for fostering organizational learning, developing entrepreneurial activities, and implementing strategies that take into account both competitors and customers. Leaders play a primary role in fostering the innovative potential of an organization by deciding on successful creation of knowledge and putting it into implementation, and by promoting the suitable medium for it (Kanter, 1983; Van de Ven, 1993). Especially change-oriented leaders encourage learning in an enterprise by communicating with their employees showing that they care about them, by providing role models with their behaviors, by forming a vision to which people will commit themselves, and by rewarding achievements (Schein, 1992).

As indicated in the literature, organizational citizenship behavior means that an employee goes beyond the formative rules of the organization and performs more than required from him. Also among its constitutive elements is offering creative ideas for development and advancement. It should be noted that contribution to making decisions in an organization will lead to sharing of ideas which will contribute to the emergence of new ideas and their implementation will lead to innovativeness. If leaders support employees in a workplace where they contribute more than required from them, their innovative ideas flourish and increase. Simply telling the employee to use new technology will not guarantee an automatic change in employee behavior (Lily and Durr, 2012), employees with a positive attitude toward new technology were more likely to have higher levels of both the civic virtue and loyalty dimensions of organizational citizenship behavior (Lily and Durr, 2012), employees engage in higher levels of OCB when the supervisor exhibits high levels of leadership behavior and lower levels of OCB when the supervisor exhibits low levels of leadership behavior regardless of whether that leader behavior is relationship- oriented or task- oriented (Lily, 2015). So it is expected that employees performing organizational citizenship behaviors will prone to contribute more into the innovativeness of the organization if they are supported by leadership behavior.

Accordingly, the following hypotheses are stipulated with the thesis that leadership styles could affect organizational citizenship behavior and increase innovation performance in companies:

$H1_a$: *Change oriented leadership mediates the effect of altruism on innovativeness*
$H1_b$: *Change oriented leadership mediates the effect of civic virtue on innovativeness*
$H1_c$: *Change oriented leadership mediates the effect of conscientiousness on innovativeness*
$H1_d$: *Change oriented leadership mediates the effect of sportsmanship on innovativeness*
$H1_e$: *Change oriented leadership mediates the effect of courtesy on innovativeness*

$H2_a$: *Task oriented leadership mediates the effect of altruism on innovativeness*
$H2_b$: *Task oriented leadership mediates the effect of civic virtue on innovativeness*
$H2_c$: *Task oriented leadership mediates the effect of conscientiousness on innovativeness*
$H2_d$: *Task oriented leadership mediates the effect of sportsmanship on innovativeness*
$H2_e$: *Task oriented leadership mediates the effect of courtesy on innovativeness*

$H3_a$: *Relation oriented leadership mediates the effect of altruism on innovativeness*
$H3_b$: *Relation oriented leadership mediates the effect of civic virtue on innovativeness*
$H3_c$: *Relation oriented leadership mediates the effect of conscientiousness on innovativeness*
$H3_d$: *Relation oriented leadership mediates the effect of sportsmanship on innovativeness*
$H3_e$: *Relation oriented leadership mediates the effect of courtesy on innovativeness*

3.DATA AND METHODOLOGY

3.1. Research Goal

In this survey we aim to identify the mediating effect of leadership style on the relationship between organizational citizenship behavior and innovativeness. The relationships among the three dimensions of leadership behavior-*change oriented leadership, task oriented leadership, relation oriented leadership*-, five dimensions of organizational citizenship behavior (OCV)- *altruism, courtesy, civic virtue, conscientiousness, sportsmanship*-, and innovativeness have been examined in details. To test the propositions, a field survey using questionnaires was conducted.

3.2.Sample and Data Collection

The survey of this study is conducted on 1041 employees of 237 firms operating in service industry in Turkey. 243 questionnaires obtained from 15 firms are eliminated because they did not meet the requirements. Data obtained from those 798 questionnaires of 222 firms were analyzed through the SPSS statistical packet program and proposed relations were tested through hierarchical regression analysis.

3.3.Measures

Five dimension scale, developed by Niehoff and Moorman (1993) was used to measure organizational citizenship behavior (OCB). It includes 4 items for each dimensions-*altruism, courtesy, civic virtue, conscientiousness, sportsmanship.* However 1 item of *civic virtue* with low factor loading was eliminated, and remaining 3 items of *civic virtue* and the 4 items of *altruism* share the same factor in the process of the exploratory factor analysis. Remaining 19 items were loaded on four different factors (*altruism-civic virtue, courtesy, conscientiousness, sportsmanship*) without any cross-loadings. Three-dimension-leadership behavior scale developed by Yukl (2002) was used to measure leadership style. Although 33 items -13 items for change oriented leadership (COL), 10 items for task oriented leadership (TOL), and 10 items for relation oriented leadership (ROL)- were used in scale, 2 items of ROL are eliminated because they do not load to any extracted factor. Innovativeness was measured by 8 item scale adopted from Prajogo and Sohol (2006). Remaining 39 items were loaded on four different factors (*change oriented leadership, task oriented leadership, relation oriented leadership, innovativeness*) without any cross-loadings.

4. ANALYSIS AND RESULTS

Overall, 58 items using 5 likert-type scale are used to measure four dimensions of OCB- *altruism-civic virtue, courtesy, conscientiousness, sportsmanship;* three dimensions of leadership behavior (*change oriented leadership, task oriented leadership, relation oriented leadership),* and innovativeness. Those items with factor loadings were depicted on the Appendix 1. Also as it has been seen on the Appendix 2, the Cronbach's Alpha values for each factors exceeds 0,70, which indicates the reliability of scales used in that survey.
In this study, hierarchical regression analysis were also conducted to test the hypotheses and to define the
direction of relations. When we examined the Appendix 3, it can be seen that four dimensions of OCB and three leadership styles have significant effect on innovativeness.

According to the Appendix 3, four dimensions of OCB (**β**=,166; p= ,000 for *altruism-civic virtue;* **β**=,137; p= ,001 for *conscientiousness;* **β**=,093; p= ,017 *for sportsmanship;* **β**=,069; p= ,050 for *courtesy)* have significant relationships to innovativeness. As depicted on regression model 2A, although three dimensions of OCB (**β**=,239; p= ,000 for *conscientiousness;* **β**=,117; p= ,003 for *sportsmanship;* **β**=,072; p= ,041 for *courtesy*) have significant effects on change oriented leadership, *altruism-civic virtue* does not have (**β**=,003; p= ,951). According to Regression model 3A, there is significant relationship between change oriented leadership and innovativeness (**β**=,434; p= ,000).
However when change oriented leadership has been included in regression analysis with the dimensions of OCB (*altruism-civic virtue, courtesy, conscientiousness, sportsmanship*) as independent variables, the significant effects of *conscientiousness* (**β**=,046; p= ,242) *sportsmanship* (**β**=,048; p= ,183), c*ourtesy* (**β**=,041; p= ,200) on

innovativeness have disappeared. So, hierarchical regression analysis results support $H1_c$, $H1_d$, and $H1_e$ hypotheses. However $H1_a$ and $H1_b$ hypotheses are not supported.

Regression models 2B and 2C indicate same two dimensions of OCB- conscientiousness and *sportsmanship* have significant effects on task oriented leadership (β=,202; p= ,000 for conscientiousness; β=,130; p= ,001 for *sportsmanship*), and relation oriented leadership (β=,223; p= ,000 for conscientiousness; β=,095; p= ,017 for *sportsmanship*). The other two dimensions of OCB - *altruism-civic virtue and courtesy* do not have statistically significant relations to neither task oriented leadership (β=,001; p= ,989 for *altruism-civic virtue*; β=-,043; p= ,221 for *courtesy*) nor relation oriented leadership (β=-,043; p= ,308 for *altruism-civic virtue*; β=-,007; p= ,848 for *courtesy*). According to Regression models 3B and 3C, task oriented leadership (β=,363; p= ,000) and relation oriented leadership (β=,353; p= ,000) have significant impact on innovativeness. However when task oriented leadership and relation oriented leadership have been included in regression analysis with the dimensions of OCB (altruism-civic virtue, courtesy, conscientiousness, sportsmanship) as independent variables, as depicted on Regression models 4B and 4C, the significant effects of conscientiousness (β=,074; p= ,062 for task oriented leadership; β=,068; p= ,087 for relation oriented leadership) and *sportsmanship* (β=,053; p= ,159 for task oriented leadership; β=,064; p= ,088 for relation oriented leadership) on innovativeness have disappeared. So, hierarchical regression analysis results support $H2_c$, $H2_d$, $H3_c$, $H3_d$, hypotheses, while do not support $H2_a$, $H2_b$, $H2_e$, $H3_a$, $H3_b$, and $H3_e$. In accordance with the regression analyses results, research model is being shaped as it has been shown at Appendix 4 attached.

5.   CONCLUSION

Our survey results revealed that change oriented leadership has a mediating effect on the organizational citizenship and innovativeness relationship, which has not been examined till this survey. Literature also supports the findings of this survey. Liden and Graen (1980) state that employees who have high-quality exchange relationships with their leader or managers endeavor to contribute to the organization more than required from them. Therefore, leaders who establish high-quality communication with their employees and develop a good vision to which the employees could commit themselves can both increase the employees' commitment and foster organizational performance, as employees will contribute more than required from them. With the behavior of "increasing innovation and learning" (Yukl, 2002), which is the most crucial part of change-oriented leadership, leaders decide upon successful creation and implementation of knowledge and encourage suitable environment for this. Thus they play a significant role in the shaping of innovative potential of the organization (Kanter, 1983; Ven de Van, 1993) and make a positive contribution to innovation performance. Change-oriented leaders reconcile organizational values with employees' individual values by forming a shared vision, and they encourage learning-oriented behaviors by creating convenient environment for fostering innovation and learning. Thus they increase even employees' contribution to the organization. Change-oriented leaders show behaviors that lead to develop strategic decisions, are attuned to change in the environment, and make great changes and innovations in product-services or processes (Yukl, 2002). In addition, such leaders add to innovativeness and innovation performance by ensuring that the information they obtained from rivals and customers are constantly disseminated, used and proactively investigated and recreated in the organization. In other words, change oriented leaders increase the innovativeness by creating available environment for employees. In that available environment, employees will be more willing to contribute to the organization beyond the required, which will affect the innovativeness of a organization in a positive way. Employees who work in an environment where the managers reward novelties and new ideas and reconcile employee's goals with that of the organization will be more eager to learn, take risks, experiment with new ideas, use their initiative in relations with the customers, which will increase the innovativeness in the organizations.

REFERENCES

- Aragon-Correa, J.A., Garcia-Moreales, V.J. and Cordon-Pozo, E., 2007, "Leadership and organizational learning's role on innovation and performance: Lessons from Spain", Industrial Marketing Management, 36, pp.349-359.
- Argyris, C. and Schon, D., 1978, "Organizational Learning", Addison-Wesley, London.
- Brief, A. ve S.J. Motowidlo (1986), "Prosocial Organizational Behavior", Academy of Management Review, Vol.11: 710-725.
- Dipaola, M. F., & Hoy, W. K. (2005). "Organizational citizenship of faculty and achievement of high school students", High School Journal, 88(3), 35-45.
- Graham, W. Jill. "Promoting Civic Virtue Organizational Citizenship Behavior: Contemporary Questions Rooted in Classical Quandaries From Political Philosophy", Human Resource Management Review. Vol.10, No.l, 2000, ss. 70-81.
- Katz, D. & Kahn, R. L., 1978, "The social psychology of organizations", Second Ed., New York: Wiley.
- Kidder, D.L., 2002, "The Influence of Gender on the Performance of Organizational Citizenship Behaviors", Journal of Management, C.28, S.5, s.629-648.
- Kluchohn, C., & Murray, H. A., 1948, "Personality in Nature, Society and Culture". New York: Knopf.
- LaPolice , C. C., 2002 , "Leader Behavior, Employee Attitudes and Organizational Characteristics as Moderators", A Dissertation of Doctor, The George Washington University.
- Law, J., 1994, "Organizing modernity" Blackwell, Oxford (In Felix T. Mavondo, Jacqueline Chinhanzi, ve Jillian Stewart, Learning Orientation and Market Orientation: Relationship with Innovation, Human Resource Practices and Performance, European Journal of Marketing, 2005, Vol.39, No:11/12, pp.1235-1263).
- McDonough, E. F., 2000, "Investigation on factors contributing to the success of cross-functional teams", Journal of Product Innovation Management, 17, 221-235.
- Luthans, F., 1995, "Organizational Behavior", 7. Ed, McGraw-Hill Inc., New York.
- Luthans, F., Organizational Behavior. Sixth Edition. New York: McGraw- Hill Press, 1992.
- Mackenzie, B. Scoot, P., M. Podsakoff, and Rich,G.A., 1998, "Some Possible Antecedents   and Consequences of in Role and Extra Role Salespersons Performance", Journal of the Academy of Marketing Science Vol 62 pp. 87-88.
- Malhotra, N.K.1993, "Marketing Research", Prentice Hall International Inc.
- Mavondo, F. T., Chinhanzi, J. and Stewart, J. 2005, "Learning Orientation and Market Orientation: Relationship with Innovation, Human Resource Practices and Performance", European Journal of Marketing, Vol.39, No:11/12, pp.1235-1263.
- Moorman, H. R, Brian B. Niehoff and Organ D.O., 1993, "Treating Employees Fairly and Organizational Citizenship Behavior: Sorting to Effects Job Satisfaction, Organizational Commitment and Procedural Justice", Employee Relationships and Right Journal Vol. 6, No 3, pp. 202-205.
- Niehoff , 1993, "Justice as a Mediator of Relationship Between Methods of Monitoring and Organizational Citizenship Behavior", Academy of Management Journal, Vol 36.
- Organ, W. Dennis, 1990, "The Motivational Basis of Organizational Citizenship Behavior", Research in Organizational Behavior, Vol. 12: 43-72.
- Organ, D.W. and Lingl, A., 1995, "Personality, Satisfaction and Organizational Citizenship Behavior", The Journal of Social Psychology, Vol.135, No. 3: 339-350.
- Organ, W. Dennis, 1997, "Organizational Citizenship Behavior: It's Construct Clean-Up Time", Human Performance, Vol. 10, No.2: 85-97.
- Organ, W. D,Podsakoff P. and Mackenzie, S., 2006, "Organizational Citizenship Behavior", Sage Publication, Inc., California.
- Organ, D.W., 1988, "Organizational Citizenship Behavior", Lexington, MA: Lexington Books.
- Organ, D.W., and W. Clay Hamner, 1982, "Organizational Behavior", Business Pub.
- Organ, D.W. and Moorman, R. H., 1993, "Fairness and Organizational Citizenship Behavior: What Are the Connections?", Social Justice Research, 6, pp. 5-18
- Orpen, C., 1994, "The Effect of Organizational Commitment on the Relationship Between Procedural and Distributive Justice", The Journal of Social Psychology, 134(1), pp. 135-136.

- Oshagbemi, T., 2000, "Satisfaction with Co-Workers' Behavior", Employee Relations, Vol. 22, No.l: 88-106.
- Peterson, R. S., Smith, D. B., Martorana, P. V. and Owens, P. D. (2003), The impact of chief executive officer personality on top management dynamics: One mechanism by which leadership affects organizational performance, Journal of Applied Psychology, 88 (7), pp.795-808.
- Porter, M., 1996, "What is strategy?", Harvard Business Review, 74 (6), pp.61-78.
- Prahalad, C. K. and Hamel, G., 1991, "Competing for the Future", Boston, Harvard Business School Press.
- Schein, E. H., 1993, "On dialogue, culture and organizational learning", Organization Dynamics, Vol.22, No.2, pp.40-51.
- Waldman, D. A., Ramirez, G. A., House, R. J. and Puranam, P., 2001, "Does leadership matter? CEO leadership attributes and profit ability under conditions of perceived environmental uncertainty", Academy of Management Journal, 44, pp.134-143.
- Wang, C. L., 2008, "Entrepreneurial orientation, learning orientation, and firm performance", Entrepreneurship Theory and Practice, July, pp.635-657.
- Yousef, D. A., 2000, "Organizational commitment: A mediator of the relationships of leadership behavior with job satisfaction and performance in non-western country", Journal of Managerial Psychology, 15 (1), pp.6-28.
- Yukl, G., 2002, "Leadership in Organizations", Fifth Edition, Prentice Hall Inc., New Jersey.
- Zhu, W., Chew, I. K. H. and Spangler, W. D., 2005, "CEO transformational leadership and organizational outcomes: The mediating role of human capital enhancing human resource management", Leadership Quarterly, 16 (1), pp.39-52.

APPENDICES

Appendix 1
Factor Analysis Results

Independent Variables	Altruism-Civic Virtue	Conscientiousness	Sportsmanship	Courtesy
Help others who have heavy work loads	,812			
Willingly give of my time to help others who have work related problems	,791			
Help others who have been absent	,733			
Help orient new people even though it is not required	,725			
Attend and participate in meetings regarding the organization	,670			
Keep abstract of change in organization	,582			
Attend functions that are not required, but that help the company image	,554			
I am always punctual		,810		
Do not take extra breaks		,755		
Never take long lunches or breaks		,726		
Obey company rules, regulations and procedures even when no one is watching		,643		
Consume a lot of time complaining about trivial matters (R)			,799	
Constantly talk about wanting to quit my job (R)			,781	
Make problems bigger than they are (R)			,765	
Always focus on what's wrong with my situation, rather than the positive side of it (R)			,686	
Inform my executive before taking any important actions				,789
Consults with my subordinates or other individuals who might be affected by my actions or decision				,771
Do not abuse the right of others				,759
Take steps to prevent problems with others				,739
Total Explained Variance %60,505				

451

Appendix 1 ctd.

Depended Variables	Change-Oriented Leadership	Task-Oriented Leadership	Relation-Oriented Leadership	Innovativeness
Encourages and facilitates innovation and entrepreneurship by others	,752			
Develops innovative new strategies linked to core competencies	,748			
Empowers people to implements new strategies	,737			
Experiments with new approaches	,735			
Forms task forces to guide implementation of change	,732			
Makes symbolic changes that are consistent with a new vision or strategy	,728			
Builds a coalition of key people to get change approved	,713			
Envisions exciting new possibilities for the organization	,708			
Encourages people to view problems or opportunities in a different way	,678			
Encourages and facilitate learning by individuals and teams	,651			
Announces and celebrates progress in implementing change	,646			
Interprets events to explains the urgent need for change	,639			
Studies competitor and outsiders to get ideas for improvements	,560			
Directs and coordinates the activities of unit		,725		
Assigns work to groups or individuals		,721		
Explains rules, policies, and standard operating process		,697		
Monitors operations and performance		,688		
Clarifies role expectations and task objectives		,667		
Organizes work activities to improve efficiency		,623		
Plans short term operations		,603		
Resolves immediate problems that would disrupt the work		,564		
Emphasizes the importance of efficiency, productivity, and quality		,552		
Sets high standards for unit performance		,509		
Recognizes contributions and accomplishments			,687	
Socializes with people to build relationships			,681	
Consults with people on decision affecting them			,667	
Keeps people informed about actions affecting them			,638	
Provides support and encouragement			,636	
Expresses confidence that people can attain challenging objectives			,624	
Helps to resolve conflicts			,582	
Provides coaching and mentoring			,552	
Implementation speed of novel technologies in new products and other processes				,882
Technological innovativeness in new products and processes				,874
Change in technology, techniques and processes				,862
The number of new products and services in last 5 years				,826
The number of new products introduction				,818
The level of technological competitiveness				,800
Executives' attention into the R&D, technological leadership, and innovativeness				,755
The number of radical changes in product and service lines in last 5 years				,717

Total Explained Variance %65,854

Appendix 2
Cronbach Alpha Values and Source of Scales

Concepts	Number of Items	Scale Format	Cronbach Alpha	Scale Sources
Altruism-Civic Virtue	7	LRF	0,861	Niehoff and Moorman (1993) Podsakoff and Mackenzie (1989)
Conscientiousness	4	LRF	0,794	Niehoff and Moorman (1993)
Sportsmanship	4	LRF	0,810	Niehoff and Moorman (1993)
Courtesy	4	LRF	0,776	Niehoff and Moorman (1993)
Change-Oriented Leadership	13	LRF	0,958	Yukl (2002)
Task-Oriented Leadership	10	LRF	0,912	Yukl (2002)
Relation-Oriented Leadership	8	LRF	0,931	Yukl (2002)
Innovativeness	8	LRF	0,941	Prajogo and Sohol (2006)

Notes: a LRF - Likert Response Format (Five point: 1=strongly disagree to 5=strongly agree)

Appendix 3
Regression Analysis Results on the Mediator Effect of Leadership Styles on Organizational Citizenship and Innovativeness Relationship

Regression Model	Independent Variables	Depended Variables	Standardized β	Sig.	Adjusted R^2	F Value	Model Sig.
1	Altruism-Civic Virtue	Innovativeness	,166***	,000	,092	21,133	,000
	Conscientiousness		,137***	,001			
	Sportsmanship		,093*	,017			
	Courtesy		,069*	,050			
2A	Altruism-Civic Virtue	Change Oriented Leadership	,003	,951	,086	19,821	,000
	Conscientiousness		,239***	,000			
	Sportsmanship		,117**	,003			
	Courtesy		,072*	,041			
2B	Altruism-Civic Virtue	Task-Oriented Leadership	,001	,989	,084	19,153	,000
	Conscientiousness		,202***	,000			
	Sportsmanship		,130***	,001			
	Courtesy		-,043	,221			
2C	Altruism-Civic Virtue	Relation-Oriented Leadership	-,043	,308	,062	,14,067	,000
	Conscientiousness		,223***	,000			
	Sportsmanship		,095*	,017			
	Courtesy		-,007	,848			
3A	Change-Oriented Leadership	Innovativeness	,434***	,000	,187	184,150	,000
3B	Task-Oriented Leadership	Innovativeness	,363***	,000	,131	120,697	,000
3C	Relation -Oriented Leadership	Innovativeness	,353***	,000	,123	112,856	,000
4A	Altruism-Civic Virtue	Innovativeness	,165***	,000	,226	47,501	,000
	Conscientiousness		,046	,242			
	Sportsmanship		,048	,183			
	Courtesy		,041	,200			
	Change-Oriented Leadership		,385***	,000			
4B	Altruism-Civic Virtue	Innovativeness	,166***	,000	,180	35,960	,000
	Conscientiousness		,074	,062			
	Sportsmanship		,053	,159			
	Courtesy		,083*	,013			
	Task-Oriented Leadership		312***	,000			
4C	Altruism-Civic Virtue	Innovativeness	,179***	,000	,180	35,938	,000
	Conscientiousness		,068	,087			
	Sportsmanship		,064	,088			
	Courtesy		,070*	,034			
	Relation-Oriented Leadership		,308***	,000			

Appendix 4.
Final Research Model
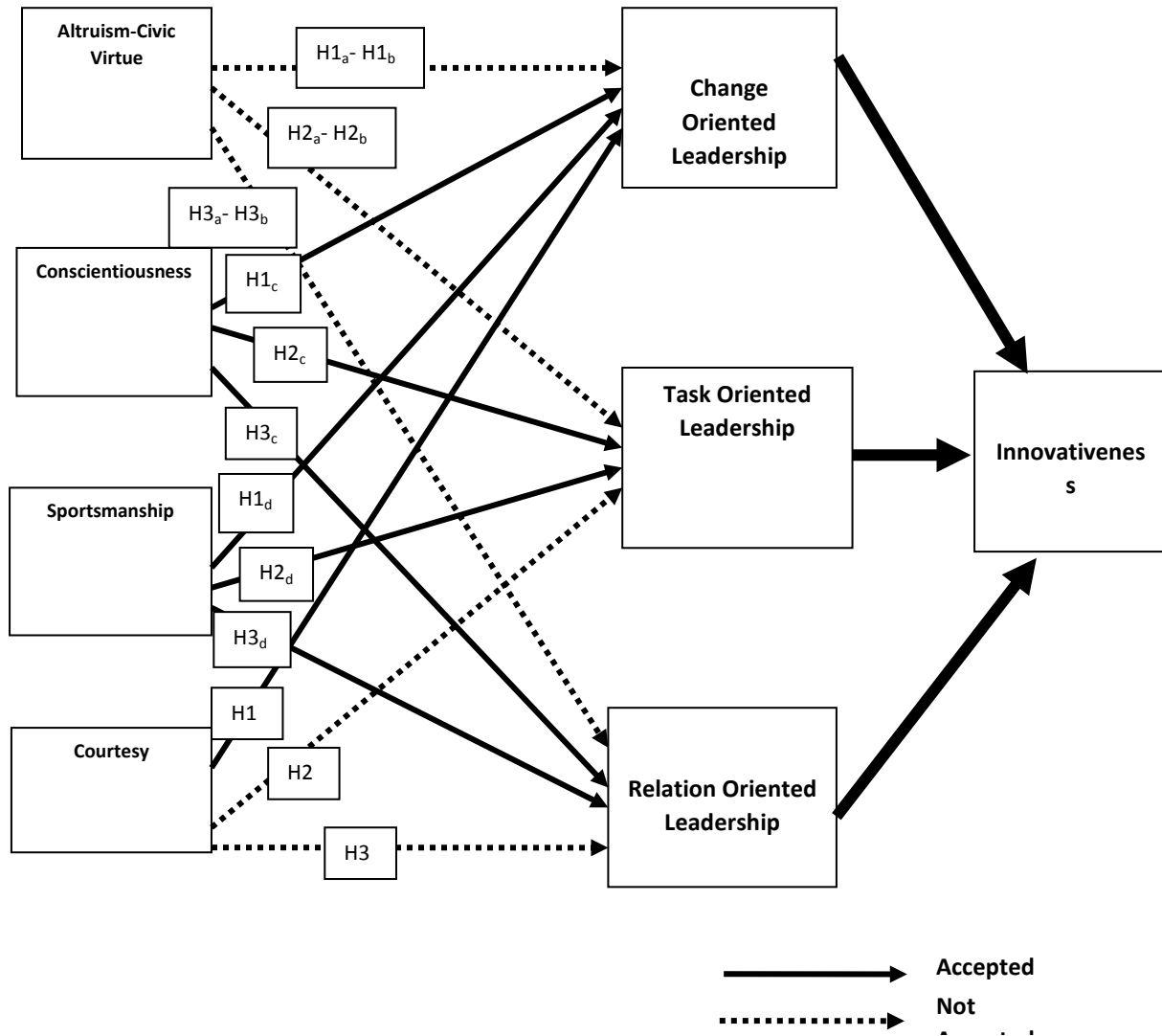
MEASURING ORGANIZATIONAL RESILIENCE: A SCALE DEVELOPMENT

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Keywords	ABSTRACT
Organizational resilience, Resilient organizations, Robustness, Agility, Integrity, Scale development **JEL Classification** M00,M10	Today's business context is characterized by hyper competition, uncertainty, and ambiguity. Added to this is the unfortunate increase in the occurrence and the intensity of the natural disasters and crises situations including economic, political and social events. Accordingly, all the changes in the external environment amplified the significance of 'resilience' for all organizations. Resilient individuals and organizations positively adapt to changing conditions without showing any stress (Mallak, 1998), and thus today organizations desire to be resilient to easily adapt to changing circumstances and move forward. Organizational resilience term is highly adopted in organizational theory field and specifically in crisis management and disaster management literatures, and recently in strategic management literature. Yet, there is not an agreed upon and commonly accepted scale of organizational resilience. Accordingly, the organizational resilience literature is yet to develop regarding quantitative studies. This study attempts to fill this gap by developing a reliable and valid scale of organizational resilience construct through adopting both qualitative and quantitative methods.

1.INTRODUCTION

In today's business context, organizations are faced with increased level of pressure from external environment due to rapidly changing business circumstances. The competition intensifies each day and there is increased occurrence of crisis and disaster situations. In such a context, resilience has become a high concern for both practitioners and academicians. The concept of resilience is rooted in psychology and ecology literature. In the management literature, the concept is mostly adopted in crisis and disaster management studies. With the increased level of uncertainty in the external environment, resilience also started to become a central concern in strategic management literature as an important concept for organizations to ensure continuity, sustainability and future success. Accordingly, organizational theory, strategic management, organizational behavior and human resources management literatures progressively focused on resilience at the organizational level. The studies mostly concentrated on conceptualizing the resilience term at the organizational level and analyzing its relationships with both internal and external factors. While practitioner, theoretical and qualitative studies abound in the literature, the quantitative studies are at the early stages of their

development. This is mostly due to the non-existence of a reliable and valid scale measuring organizational resilience. This paper attempts to fill this gap by developing an organizational resilience scale. It aims to contribute to organizational resilience literature by developing a reliable and valid measure for future development of quantitative studies.

2.LITERATURE REVIEW

The term 'resilience' is adopted in organizational studies, human resources management and engineering literatures but it is mainly rooted in the psychology and ecology field. In the studies by Werner and Smith (1977) conducted among children whose parents were suffering from severe psychological illnesses, psychological resilience was found to be the basic reason behind children's survival. The resilience capacity of these children enabled them to enhance their adaptive capacity in order to survive (Werner and Smith, 2001). With this capacity they resist to unfavorable circumstances, and develop positive reactions in order to carry on (Werner and Smith, 2001). In the psychology literature, resilience is mainly defined as the positive adaptation capacity to struggle with unfavorable circumstances. According to the literature review conducted by Luthar et al. (2000) the studies on how to dimensionalize and measure psychological resilience are still developing. In the ecology literature, at the early stages the field concentrated on sustainability and resistance of the ecosystems against stressful conditions (Holling, 1973). In recent years, the ecological studies focused more on the adaptive capacity and the flexibility of the systems (Redman and Kinzig, 2003). When the term is analyzed in these two literatures, it can be concluded that in the field of psychology the term is mostly perceived as the positive adaptive capacity of individuals experiencing adverse conditions, while in the field of ecology the term is mostly perceived as the resistance and flexibility capacity of the systems to ensure sustainability.

In organizational theory literature, resilience term is studied in crisis management, disaster management, high-reliability organizations and positive organizational scholarship literatures (Weick, 1993; Weick, Sutcliffe and Obstfeld, 1999; Tierney, 2003; Paton and Johnson, 2001). Kenda and Wachtendorf (2003), in their studies when they analyzed the World Trade Organization disaster, defined resilience as to withstand against shocks without showing any disintegration. In studying 1993 Mann Gulch fire disaster, Weick (1993) states that resilience is not only about accepting the change and ambiguity and trying to continue but also it is about turning this unfavorable condition into an advantage and finding ways to deal with it. Accordingly, Weick (1993) suggests that resilience is more than adaptation but it is also about being solution oriented, creativite and proactivite. Additional to crisis and disaster management literatures, with increased uncertainty and ambiguity in the external competitive, political and social conditions, 'organizational resilience' term started to be mentioned by several authors in organizational studies field

(Doe, 1994; Horne, 1997; Horne and Orr, 1998; Mallak, 1998; Mallak 1999). The studies mainly defined organizational resilience term, as the resistance capacity of the organizations to withstand against unfavorable and stressful conditions, as the capacity of the organizations to preserve their position and as the capacity to benefit from unfavorable conditions and to benefit from them.

More recent literature, focused on understanding organizational resilience in terms of its relationship with organizational variables to enhance success (Lengnick-Hall, Beck, and Lengnick-Hall, 2011; Teixeira and Werther, 2013; Richter and Löfsten, 2014). In their theoretical study, Lengnick-Hall (2011) studies human resources management system as a factor influencing organizational capacity for resilience. The authors define organizational resilience with three dimensions of cognitive, behavioral and contextual. Teixeira and Werther (2013) in their qualitative study analyzes resilience as a factor enhancing competitive advantage and concludes that resilient organizations not only have reactive and proactive innovations but also anticipatory innovations where buyer preferences are anticipated and innovations are developed accordingly. Limnios, Mazzarol, Ghadouani and Schilizzi (2014), suggests that the literature perceives resilience as a positive state that every organizational aims to achieve. The authors develop a framework with quadrants of rigidity, transience, adaptability and vulnerability and concludes that the desirability of resilience varies depending on the characteristics of the quadrant. The concept of resilience also started to be a major focus of discussion in small and medium sized companies literature, considering the importance of the term especially after economic crisis situations (Aleksic, Stefanovic, Arsovski and Tadic, 2013; Pal, Torstensson and Mattila, 2014).

Despite the growing interest on the term, there is not an agreed upon and widely accepted measure of organizational resilience construct. Campbell-Sills and Stein (2007) states that, in the psychology literature there is a consensus on the reliability and validity of the Conner-Davidson measure. In organizational theory literature, there are attempts to analyze the construct with different dimensions. Hind and Rowley (1996) studies the term with dimensions of change capacity, organizational commitment, social relationships, team integrity and reality perception. Mallak (1998) with the aim to dimensionalize the construct and to measure it, studies organizational resilience under six dimensions of goal-directed solution seeking, avoidance, critical understanding, role dependence, source reliance, resource access and develops a scale. Somers (2009) adopts the scale developed by Mallak (1998) and proves that the scale is reliable and valid. Tierney (2003) also dimensionalizes the construct with four dimensions of robustness, redundancy, resourcefulness and rapidity. Adopting this dimensions Wicker, Filo and Cuskelly (2013) generates 21 items to measure organizational resilience of sport clubs. Richter and Löfsten (2014) studies the capacity for organizational resilience with four dimensions of structural, cognitive, relational and emotional capacity and adopts 14 items to measure this capacity. Yilmaz-Börekçi, Say and Rofcanin (2014) attempts to develop a scale to measure supplier resilience with three dimensions of structural reliance, organizational capability and processual continuity. The literature review suggests that while there are attempts to measure organizational resilience there is not any consensus on how to measure organizational resilience.

Overall, organizational resilience term is highly adopted in organizational studies and strategic management literature. While the qualitative and theoretical studies are developing, the development in the quantitative studies are relatively slow. This is mainly attributed to the non-existence of reliable and valid scale in the literature (Vogus and

Sutcliffe, 2007). Accordingly, this study attempts to fill this gap by developing a scale to measure organization resilience. As suggested by the review of Kantur ve İşeri-Say (2012), most of the conceptualizations and corresponding scales of organizational resilience includes items that *enhance* resilience capacity of the organizations.

This study accepts that there are external and internal factors that will contribute to the resilience of organizations and the existence of those factors may stimulate resiliency in the organizations. This study aims to develop an organizational resilience scale measuring the degree of resilience in the organization not the degree of the existence of the factors that contribute to it. With this aim, this study aims to contribute to organizational resilience literature by enabling development in quantitative studies focusing on antecedents and consequences of organizational resilience in organizational settings.

3.METHODOLOGY

This study aims to develop a scale to measure resilience at the organizational level. With this aim, the study adopts both qualitative and quantitative methodology as suggested by Churchill (1979). After reviewing the current scales in the literature, first in-depth interviews and a focus group study are conducted as part of qualitative research for item generation. Second, questionnaire is developed and scale is assessed for reliability and validity with two different samples. Overall, the study aims to contribute to the literature by developing a reliable and valid scale for measuring resilience at the organizational level.

4. RESULTS

4.1. Item Generation

The literature review suggests that there is not an agreed upon and commonly accepted conceptualization of resilience at the organizational level. Accordingly, in order to dimentionalize the construct and develop the conceptual model of the study in-depth interviews and focus group studies are conducted. According to Bryman (1988) and Denzin and Lincoln (2000), in-depth interviews and focus groups studies as a qualitative approaches enable the researcher to attain a deeper information about the field. Accordingly, as part of qualitative research ten in-depth interviews and one focus group study is conducted.

The in-depth interviews were semi-structured in order to ensure that the participants feel comfortable to share their views and to achieve flexibility. Accordingly, an interview protocol is developed but served as a checklist during the interviews. The questions are asked by the interviewer to start the discussions and then the participants are allowed to elaborate on the topic. All the interviews started with 'What does resilience mean to you generally?' question and then followed with questions concentrating on the meaning of resilience in organizational settings. The researcher acted as an interviewer in each in-depth interview.

All the semi-structured in-depth interviews are conducted between 3 December 2012-11 February 2013. The interview time ranged between 25-75 minutes and the average

interview time is 45 minutes. In order to ensure to diversity of findings, the participants are selected from a heterogeneous group with different industry backgrounds and different managerial positions. All the discussions were tape recorded and then transcribed. Appendix 1 provides information on the age, gender, industry, company, position and tenure details of the participants. The appendix also includes the highly frequently mentioned items by the participants.

Additional to semi-structured in-depth interviews one focus group study is conducted. The focus group participants are graduate school students of a private university. According to Morgan (1997), the number focus group participants should range between 8-12. In the current focus group study, eight students participated. The tenure of the participants ranged between one to five year and the positions included assistant, specialist, and assistant manager. The researcher acted as the moderator and started the discussions by asking the participants their opinion about the general meaning of resilience. The discussions then concentrated on resilience at the organizational level. The participants were classmates so the environment was relaxed which ensured the depth of the discussions. In cases where one or two participants dominated the discussions the moderator intervened and ensured that other participants also shared their ideas. As in in-depth interviews all the discussions were tape-recorded and then transcribed.

Data collection is ended when the saturation is achieved. Zimmer and Golden (1988)'s procedure is adopted in analyzing the data. In order to content analyze the transcriptions data reduction method is adopted (Griggs, 1987) where the transcriptions are quantified in numbers and frequencies are calculated. The content analysis is first conducted separately for each in-depth interview and focus groups study. Then all the results are consolidated. Table 1 included the results of content analysis. In conclusion, it is observed that top three frequently mentioned items are financial power, developing a B plan and to be powerful.

Table 1. Content analysis results

Items Generated	Frequency	Items Generated	Frequency
Financial strength	57	To stand straight / to be sapient	9
Developing a B plan	43	Secure/ to resist/ resistant	9
To be powerful	32	To be prepared against risks	8
Human strength	21	Not being effected	8
To show resistance	19	To be prepared	8
To control the risks	17	To take action rapidly	8
To act as a whole	16	Not to give up	7

Employee loyalty	11	To be able to revitalize	6
Integrity	11	To keep going	6
To be experiences	11	To turn into an opportunity	5
To be prepared/to be cautious	11	To be creative	5
Employees being knit	10	Resistance strength	3
To keep the control at hand	10	Powerful management structure	2

Following content analysis, the previous scales developed in the literature are analyzed again to develop initial version of the scale. Specifically the scale developed by Mallak (1998) and Tierney (2003) is focused on. Mallak (1998) develops the scale under six dimensions of goal-directed solution seeking, avoidance, critical understanding, role dependence, source reliance, resource access. On the other hand, Tierney (2003) defines it under dimensions of robustness, redundancy, resourcefulness and rapidity. By analyzing dimensions generated by these authors and comparing them with content analysis results the organizational resilience scale is developed. Overall, organizational resilience construct is initially dimentionalized under six dimensions of robustness, integrity, agility, resistance, proactivity and precaution with 23 items.

4.2. Scale Purification

The developed scale then analyzed by two assistant professors participated in in-depth interviews. Based on their feedback item 15 and item 5 are eliminated due to clarity of the meaning and close overlap with different other items (respectively item 18 and item 7) in the scale. Accordingly, in order to test for reliability and validity a questionnaire is developed with 21 items. The questionnaire adopts Likert scale (1=strongly disagree to 5= strongly agree) questions. The respondents are asked to indicate their level of agreement with statements about their organization. The questionnaires are distributed to graduate school students in two different private universities during March 2013. At the end of the data collection period 73 questionnaires are collected. In order to assess the dimentionality of the construct first exploratory factor analysis is conducted using Principal components analysis with Varimax rotation. The initial results revealed that the use exploratory factor analysis is proper with a significant The Bartlett's test of Sphericity and the Kaiser-Meyer-Olkin estimate of .895. Contrary to expected the analysis revealed three dimensions with eigenvalues greater than one. In total these three dimensions of *robustness, agility and integrity* explained 66% of the total variance in the data. For item purification item loadings are analyzed. The items with below .70 loadings and items that cross-load on multiple dimensions are eliminated from the scale. Overall, 12-item loading on three dimensional organizational resilience scale has an acceptable Cronbach's alpha value (.92). Items generated and their corresponding loadings are available in Appendix 2.

4.3. Scale Validation

In order to assess the validity of the developed scale, one week later a new questionnaire is distributed to same respondents using a ratio scale. This time the respondents are asked to indicate the existence of the items mentioned in the scale by giving values between 0 to 100. At the end of the data collection procedure 59 questionnaires are collected. At the end of the second data collection period Multi-Trait Multi-Method (MTMM) (Campbell and Fiske, 1959) is developed and the scale is tested for reliability and validity (see Table 2). To assess reliability first the longest diagonal of the MTMM is analyzed which involved Cronbach alpha values. The matrix shows that all the values are at acceptable levels which indicated that the scale is a reliable scale. To assess construct validity, both convergent validity and discriminant validity is evaluated. To assess convergent validity, validity diagonal values which shows the measurement results of the same dimensions with different methods are evaluated. The results are at acceptable levels. There are three requirements of discriminant validity as suggested by Campbell and Fiske, 1959. First, the validity values in the validity diagonal should be greater than the values sharing same rows and columns with them in the same hetero-method blocks. Second, the validity values should be greater than the values in hetero-trait mono-method triangles. Third, the distribution in both hetero-trait hetero-method triangles and hetero-trait mono-method triangles should follow the same pattern. When the matrix values are analyzed, it is observed that first and second requirement is achieved while the third requirement for discriminant validity is party achieved. Overall, the developed scale is found to have acceptable reliability and validity values. When the Cronbach alpha values are analyzed

separately for both methods, the 12-item organizational resilience scale has an estimate of 0,92 for interval scale, and an estimate of 0,96 for ratio scale.

Table 2. Multi-Trait Multi-Methot Matrix MMTM)[c]

MTMM		Method 1 (Interval scale)			Method 2 (Ratio scale)		
		Robustness	Agility	Integrity	Robustness	Agility	Integrity
Method 1	Robustness	0,912[a]					
	Agility	0,558	0,925[a]				
	Integrity	0,343	0,401	0,767[a]			
Method 2	Robustness	0,713[b]	0,544	0,530	0,954[a]		
	Agility	0,617	0,787[b]	0,417	0,797	0,922[a]	
	Integrity	0,566	0,514	0,641[b]	0,734	0,673	0,875[a]

a = reliability values; b = validity values; c = Correlations are significamt at 0.01 level.

4.4. Scale Revalidation

In order to reassess the reliability and validity of the developed scale new data is collected. The sample is selected from firms operating in İstanbul Manifaturacılar Çarşısı (İMÇ). İMÇ is one of the oldest marketplace of Turkey since 1970. There are cluster of small and medium sized companies operating in diversified industries. This sample is selected mainly because of three reasons. Firstly, these companies are perceived to be resilient family business operating for long years. Secondly, considering the toughness of collecting firm-level data in the national context, it is considered more likely to reach a larger number of firms. Thirdly, considering that Turkish economy is dominated by small and medium size enterprises, it is more meaningful to validate a scale with a sample representative of the whole population. The questionnaires are developed with Likert scale and respondents were asked their agreement with resilience statement (1=strongly disagree to 5= strongly agree). The data is collected by face to face between September 2013- November 2014. The questionnaires are distributed to the firms and the respondents are given ample time for them answer the questions. At the end of the data collection 188 questionnaires are collected. 32 of the firms operate in home textile industry, 28% of the firms operate in machine and replacement parts industry , 18% of the firms operate in textile industry, 15% firms operate in music industry , 4% of the firms operate in carpet industry and %3 of the firms operate in decoration industry. 43% of the participants are firm owners, 22% of the participants are store managers, %33 of them are sales representatives and %2 are accountants. Approximately 57% of the firms are family businesses. 31% of the firms are operated by the first-generation, 58% of the firms are

operated by the second-generation and lastly 11% of the firms are operated by the third-generation.

First exploratory factor analysis is conducted with the new data using Principal components analysis with Varimax rotation. The Bartlett's test of Sphericity is significant with Kaiser-Meyer-Olkin estimate of .86. The analysis produced three dimensions explaining the 66% of the variation. Three items have loadings below .70 and therefore excluded from the analysis. When the results are compared with exploratory factors analysis results of the first data it is observed that items deleted in the current stage were loading on the same dimension and they were all related to strength/power of the business. Overall, 9-item organizational resilience scale has Cronbach's alpha value of .85. The results of exploratory factor analysis are available in Table 3.

Table 3. Exploratory Factor Analysis Results

Item no	My organization…	Dimension 1	Dimension 2	Dimension 3
1	stands straight and preserves its position.	.773		
2	is successful in generating diverse solutions.	.768		
3	has the strength to use required resources.	.517 (deleted)		
4	rapidly takes action.		.628	
5	develops alternatives in order to benefit from negative circumstances.		.802	
6	is agile in taking required action when needed.		.724	
7	is a place where all the employees engaged to do what is required from them.			.774
8	is successful in acting as a whole with all of its employees.			.891
9	is a powerful organization and not easily affected by outside factors.		.524 (deleted)	
10	shows resistance to the end in order not to lose.	.727		
11	is powerful to overcome everything.			.524 (deleted)
12	does not give up and continues its path.	.703		

Next to revalidate the scale Confirmatory Factor Analysis (CFA) is conducted (see Fig. 1). The measurement model had a significant chi-square statistic [$\chi^2_{(24)}$ = 59] as expected due to the sample size. When the indices are analyzed it is observed that they are acceptable levels. Comparative fit index (CFI) is .95, Normed fit index (NFI) is .92, and the root mean square error of approximation (RMSEA) is .8. When standardized item loadings are analyzed (see Table 4) it is observed that all items significantly load on their dimensions. To scale is accepted to have convergent validity since all the items significantly load to their respective dimensions. To assess discriminant validity, average variance extracted (AVE) is computed for each dimension and compared with squared correlations and the results show that they are significantly higher for each dimension. Table 5 shows AVE values and descriptive statistics.

Fig. 1. Measurement Model
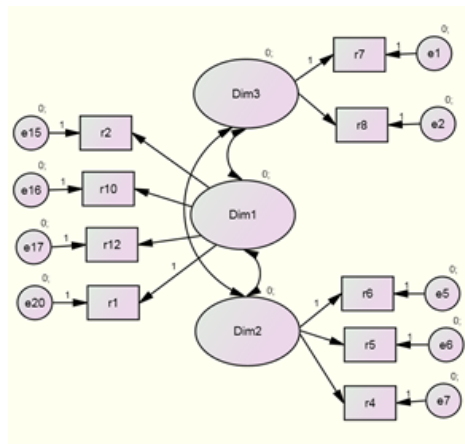
Overall, the analysis confirmed the three-dimensional structure of organizational resilience construct. The robustness dimensions included items aiming to measure the resistance capacity of the firms. Agility dimension includes items assessing how easily and rapidly firms adapt to changing circumstances and lastly integrity dimensions measures the extent to which employees are knit together in the firm.

Table 4. Standardized Item Loadings

Item no	Item	Dimension	Standardized Loadings
1	stands straight and preserves its position.	robustness	.633***
2	is successful in generating diverse solutions.	robustness	.610***
4	rapidly takes action.	agility	.688***
5	develops alternatives in order to benefit from negative circumstances.	agility	.544***
6	is agile in taking required action when needed.	agility	.802***
7	is a place where all the employees engaged to do what is required from them.	integrity	.900***
8	is successful in acting as a whole with all of its employees.	integrity	.819***
10	shows resistance to the end in order not to lose.	robustness	.814***
12	does not give up and continues its path.	robustness	.853***

***p<.01 (one-tailed tests)

Table 5: Descriptive Statistics

	AVE	Mean	S.D.	1	2	3
Robustness	.83	4.3	.59	.82[a]		
Agility	.86	4.0	.63	.64**	.73	
Integrity	.94	4.3	.75	.51**	.65**	.85

[a] Values on the diagonal are Cronbach's alpha values.

** p<.01 (one-tailed tests).

5. CONCLUSION

This study adopts both qualitative and quantitative research methods with the aim to measure organizational resilience. As part of qualitative methodology in-depth interviews and focus group studies are conducted. Based on the content analysis results of the qualitative phase, items are generated and questionnaire is developed to test for reliability and validity. As part of quantitative study, data is collected from the same respondents with two different methods and the scale is tested for reliability and validity. The results showed that organizational resilience construct is dimensionalized with three dimensions of robustness, agility and integrity, and the develop scale has acceptable reliability. To assess construct validity Multitrait-Multimethod Matrix (MTMM) developed and scale produced acceptable convergent and discriminant validity. In order to revalidate the scale new data is collected and confirmatory factor analysis is conducted. Overall, the results showed that 9-item organizational resilience scale developed in the current study is a reliable and valid scale.

Organizational resilience scale developed in the current study has a three dimensional structure. The first dimension is robustness includes four items and measure the organizations capacity to withstand against and recover form unfavorable conditions. Second dimension agility includes three items and measure organizations capacity to take actions rapidly. Lastly, integrity dimension includes three items and measures the cohesion among employees in the organization faced with unfavorable circumstances. In conclusion, the scale developed in the current study aims to contribute to the development of quantitative studies in the organizational resilience research through developing a reliable and valid scale. Future research is needed to revalidate the scale with diverse set of samples such large-sized organizations, non-for-profit organizations and public institutions.

REFERENCES

- Aleksic, A, Stefanovic, M., Arsovski, A. and Tadic, D, 2013, "As Assessment of Organizational resilience potential in SMEs of the process industry, a fuzzy approach,"Journal of Loss Prevention in the Process of Industries, 26, 1238-1245.

- Bryman, A, 1988, *Quantity and Quality in Social Research*, Contemporary Social Research Series No. 18, London: Unwin Hyman.

- Campbell-Sills, L. and Stein, M., 2007, "Psychometric analysis and refinement of the Connor–Davidson Resilience Scale (CD-RISC): validation of a 10-item measure of resilience," *Journal of Traumatic Stress* 20, 1019–1028.

- Campbell D. T. ve Fiske, D. W., 1959, "Covergent and Dicriminant Validation by the Multitrait-Multimethod Matrix," *Psychological Bulletin,* 56, 2, 81-110.
- Churchill, G.A., 1979, "A paradigm for developing better measures of marketing constructs," *Journal of Marketing Research*, 64-73.

- Conner, D. R., 1993, "Managing at the speed *of change"*, Villard Books, New York.

- Denzin N. K. and Lincoln Y., 2005, The SAGE Handbook of Qualitative Research, Sage Publications.

- Doe, P. J., 1994, "Creating a resilient organization", *Canadian Business Review,* 21, 2, 22-25.

- Hind, P., Frost, M. and Rowley, S., 1996, "The resilience audit and the psychological contract," *Journal of Managerial Psychology*, 11,7, 18-29.

- Holling, C. S., 1973, "Resilience and stability of ecological systems," *Annual Review of Ecology and Systematics,* 4, 1-23.

- Horne, J. F., 1997, "The coming age of organizational resilience," *Business Forum,* 22, 24-28.

- Horne, J. F. and Orr, J. E., 1998, "Assessing behaviors that create resilient organizations", *Employment Relations Today* ,24, 29-39.

- Glassop, L., 2007, "The three R's of resilience: redundancy, requisite variety and resources in building and sustaining resilience in complex organization," *Journal of Purchasing and Supply Chain Management*, 16, 1, 17-26.

- Griggs, S., 1987, "Analysing qualitative data," *Journal of the Market Research Society*, 29,1, 15-34.

- Kantur, D. and İşeri Say, 2012, "Organizational Resilience: Conceptual Integrative Framework," *Journal of Management and Organization*, 18, 6, 762 - 773.
- Kendra, J. M. and Wachtendorf, T., 2003, "Elements of resilience after the world trade center disaster: reconstituting New York City's Emergency Operations Centre," *Disaster* 27,1, 37-53.

- Lengnick-Hall, C. A. and Beck, T. E. 2003, "Beyond bouncing back: the concept of organizational resilience". Presented at the Academy of Management Organization and Management Theory Division Seattle, Washington August 1-6.

- Lengnick-Hall, C.A., Beck, T.E. and Lengnick-Hall, M.L. 2011, "Developing a capacity for organizational resilience through strategic human resources management," *Human Resource Management Review*, 21, 243-255.

- Limnios, E.,A.,M., Mazzarol, T., Ghadouani, A. and Schilizzi, S.G.M., 2014, "The resilience architecture framework: Four organizational archetypes," *European Management Journal*, 32, 104-116.

- Luthar, S. S., Cicchetti, D. Ve Becker, B. 2000, "The construct of resilience: A critical evaluation and guidelines for future work," *Child Development* 71,3, 543-562.

- Samuel Mafabi, John Munene, Joseph Ntayi, 2012, "Knowledge management and organisational resilience: Organisational innovation as a mediator in Uganda parastatals," *Journal of Strategy and Management*, 5, 1, 57 – 80.

- Mallak, L. A. 1998a, "Measuring resilience in health care provider organizations," *Health Manpower Management* 24,4, 148–152.

- Mallak, L. A. 1999, "*Toward a theory of organizational resilience*. Proceedings of Portland International Conference on Management of Engineering and Technology, 1999 (PICMET '99)," Technology and Innovation Management, July 25-29, Portland.

- Morgan, D. L. 1997, "*Focus Groups as Qualitative Research",* Thousand Oaks, California: Sage Publications.
- Pal, R., Torstensson, H. and Mattilla, H. 2014, "Antecedents of organizational resilience in economic crises-an empirical study of Swedish textile and clothing SMEs*," Int. J. Production Economics*, 147, 410-428.

- Paton, D. and Johnson, D. 2001, "Disasters and communities: vulnerability, resilience and preparedness," *Disaster Prevention and Management* 10,4, 270-277.

- Redman, C. L. and Kinzig, A. P. 2003, "Resilience of past landscapes: resilience theory, society, and the longue durée," *Conservation Ecology* 7(1): 14. http://www.consecol.org/vol7/iss1/art14 on 12 September 2011.

- Richtner, A. and Löfsten, H. 2014, "Managing in turbulence: how the capacity for resilience influences creativity," *R&D Management*, 44,2, 137-151.

- Somers, S. 2009, "Measuring Resilience Potential: An Adaptive Strategy for Organizational Crisis Planning," *Journal of Contingencies and Crisis Management,* 17, 1, 12–23.

- Teixeira, E.O. and Werther Jr., W.B. 2013, "Resilience: Continuous renewal of competitive advantages," *Business Horizons*, 56, 333-342.

- Tierney, K. 2003, "Conceptualizing and measuring organizational and community resilience: lessons from the emergency response following the September 11, 2001 attack on the World Trade Center". Paper presented at the Third

Comparative Workshop on Urban Earthquake Disaster Management, Kobe, Japan.

- Vogus, T.J. and Sutcliffe, K.M. 2007, "'Organizational resilience: Towards a theory and research agenda", IEEE Int. Conf. Systems, Man and Cybernetics, 3418–3422.

- Yilmaz-Börekçi, D., Say, İşeri Say and Rofcanin, Y. 2014, "Measuring supplier resilience in supply networks," Journal of Change Management, DOI: 10.1080/14697017.2014.889737.
- Weick, Karl E. 1993, "The collapse of sensemaking in organizations: The Mann Gulch disaster," *Administrative Science Quarterly* 38, 4, 628-652.

- Weick, K. E., Sutcliffe K. M. and Obstfeld, D. 1999, "Organizing for high reliability: processes of collective mindfulness," *Research in Organizational Behavior* 21, 81-123.

- Werner, E. E. ve Smith, R. S. 1977, "*Kauai's Children Come of Age"*, University of Hawaii Press, Honolulu.

- Werner, E. E. ve Smith, R. S. 2001, "*Journeys from Childhood to Midlife: Risk, Resilience, and Recovery*," Cornell University Press, Ithaca, NY.

- Wicker, P., Filo, K. and Cuskelly, G. 2013, "Organizational Resilience of Community sports Clubs Impacted by Natural Disasters", Journal of Sports Management, 27, 510-525.

- Zimmer, M. R. and Golden, L.L., 1988, "Impressions of Retail. Stores: A Content Analysis of Consumer Images," Journal of. Retailing, 64, 3, 265-293.

Appendix 1: Participants of in-depth interview

No	Age	Gender	Industry	Company	Position	Tenure	İtems*
1	60	female	chemistry	Holding Company Large-sized	Chief	28	To resist, to hold out against, to be powerful, financial strength
2	60	male	plastics	Holding Company	Assistant to manager	27	Human strength, financial strength, to countervail
3	50	female	automotive	Multinational Company Large-sized	Manager	15	To be prepared, financial strength, to be cautious
4	34	female	academician	Private University, Management Department	Assistant Professor	10	To be prepared with a B plan, to stand straight, to be impervious
5	27	female	law	Law Consultancy, Medium-sized	Lawyer	2	Strength, integrity, revitalization capacity
6	32	female	academician	Public University, Marketing Department	Assistant Professor	10	To be powerful, loyal employees, engagement
7	40	male	textile	International Trade Company, Small-sized	Owner	12	Human strength, financial strength, to take action rapidly
8	51	male	textile	Holding Company Large-sized	Assistant General Manager	18	Minimizing risk, generating alternatives, to be prepared
9	58	male	food	Restaurant owner, Small-sized	Owner	38	To act as a whole, not to give up, to stand straight
10	52	female	banking	Private Bank, Small-sized	Assistant to manager	25	To be powerful, to show resistance, to continue

*Items include top three frequently mentioned items by each participant

Appendix 2: Items generated

Item no	My organization…	Dimension 1	Dimension 2	Dimension 3
1	easily adopts to changing circumstances.		.644 (deleted)	
2	is a place where employees clearly know which resources to use and how to use them.			.483 (deleted)
3	stands straight and preserves its position.	.752		
4	is successful in generating diverse solutions.		.743	
5	is a place where team/department members share their responsibilities if needed.	(excluded from the analysis)		
6	has the strength to use required resources.	.744		
7	rapidly takes action.		.873	
8	develops alternatives in order to benefit from negative circumstances.		.753	
9	does not easily give up.	.660 (deleted)		
10	is agile in taking required action when needed.		.831	
11	has always-ready alternatives against possible scenarios.		.620	.408 (deleted)
12	is a place where all the employees engaged to do what is required from them.			.876
13	is a place where how to take action is always clear.			.520 (deleted)
14	never gives up and resist to different conditions.		.461	.468 (deleted)
15	takes action quickly.	(excluded from the analysis)		
16	turns circumstances to its benefit by acting creative and innovative.		.565	.430 (deleted)
17	is always prepared for every situation.	.567	.447	.440 (deleted)
18	is successful in acting as a whole with all of its employees.			.833
19	is a powerful organization and not easily affected by outside factors.	.775		
20	shows resistance to the end in order not to lose.	.723		
21	is powerful to overcome everything.	.841		
22	does not give up and continues its path.	.790		
23	easily overcomes everything.		.461	.468 (deleted)

THE EFFECT OF VISION AND ROLE CLARITY ON TEAM PERFORMANCE

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Keywords	ABSTRACT
Team performance, Team vision, Role clarity, Team success	A strong vision and role definition can provide direction to a team and can positively impact its ability to succeed. However, although many studies conclude that vision and role clarity are important at the organizational level, the impacts of vision and role clarity on innovation/teams have received far less attention. The purpose of this research is to discuss vision components and Role Clarity, and explore their impacts on team performance. After studying the vision on a series of 9 innovation teams at three companies (Apple, IBM, and HP), we empirically tested the impact of the two components of vision (Vision Clarity, and Vision Support) and Role Clarity on overall team performance. Data were collected from 75 team members. We found that Vision Clarity has a positive effect on team performance. We also found that Vision Support and Role Clarity are not significantly related to team performance.
JEL Classification D20,C92,O30	

1.INTRODUCTION

In order to improve effectiveness many companies have changed their structures from hierarchical organizational units to decentralized work teams (Mannix and Neale, 2005). At the same time, the process of team building has become more complex and requires more sophisticated management skills (Revilla and Cury, 2009). Incomplete or ambiguous specification of team vision and ambiguous role in collaborative team work is important problems among team members (see Stewart, Fulmer, Barrick, and Hollenbeck, 2005; Esper, Fugate, and Rapert, 2008; Shalley and Gilson, 2004; Koufteros, Vonderembse, and Doll, 2002; Lynn and Akgun, 2001; Rose, Ahuja, and Jones, 2006; Revilla and Rodriguez, 2011). For the purposes of our study, teams are defined as "a distinguishable set of two or more people who interact, dynamically, interdependently, and adaptively toward a common and valued goal/objective/mission, who have each been assigned specific roles or functions to perform, and who have a limited life-span of membership" (Rouse, Cannon-Bowers, and Salas, 1992).

The teams may be composed of individuals closely tied within organizational and functional boundaries (e.g., marketing), or teams may be cross-functional (e.g., marketing, accounting, and production), where individuals originate from a variety of disciplines and

responsibilities (Hansen, 1994). Because individuals from various functional areas often have different ideas about the project, without effective team vision and role definition these individuals generally pull the project in different directions and thereby adversely affect the performance of team (Stewart et al., 2005; Esper et al., 2008; Revilla and Rodriguez, 2011). In teams with a strong shared vision and role definition, members have a common sense of purpose and agreed- upon goals, and are more likely to feel motivated, empowered, and committed to their teams' collective future (Hackman, 1992; Kirkman and Rosen, 1999; Zhang, Waldman, and Wang, 2012).

Vision is a statement of the desired future state of something (Rice, O'Conner, Peters, and Morone, 1998). Team vision indicates the extent to which the team has a clear, shared, attainable vision or set of objectives (Gibbon et al., 2002). When the team has a vision, objectives can be set and the effectiveness of these objectives determined. Shalley and Gilson (2004) asserted that a communicative vision can maximize the creativity of individuals by affecting team and organizational conditions that foster innovation. By enabling the enactment of a shared team vision, concurrent development facilitates downstream coordination, enhances product integrity, and improves product development success (Koufteros et al., 2002). Thus, if the team is to be effective, it will need to be driven forward by either an implicit or explicit shared vision, which has been developed from within the group, is valued by the group and deemed to be attainable and realistic. Khurana and Rosenthal (1998) identified that the common team problem areas in the front end include: (1) unclear project strategy and projects not prioritized, (2) unclear tradeoff of project objectives and unsuitable assignment of people to projects and, (3) unclear interface of subsystems and the lack of team members' direction.

In teams, decisions are frequently made by team members. But team members may have a different vision or interpretation of the same event, may be pursuing different priorities or goals, and hence may be in conflict with one another regarding data acquisition, interpretation and dissemination (Zhang and Doll, 2001). Thus, in order to minimize the adverse effects of the various diversities in a team and to promote better performance, it is important to develop a common view among team members (Revilla and Rodriguez, 2011). Ray and Bronstein (1995) stated that in successful teams the individual members are not controlled, managed, or supervised. Instead, team members are led by a shared vision of the goals and purpose of the organization. In teams with a strong shared vision, members have a common sense of purpose and agreed- upon goals, and are more likely to feel motivated, empowered, and committed to their teams' collective future (Hackman, 1992; Kirkman and Rosen, 1999; Zhang et al., 2012).

Based on the previous literature, our study identifies two components in the concept of vision. It should be vision clarity, and vision support. These components together allow the development of a team vision that will guide the efforts of the team in a common direction, despite the differences among team members. Other scholars have also emphasized similar vision components. Hamel and Prahalad (1989), for example, assert that an effective organizational vision has three components. It must be (a) clear, (b) supported by others in the organization, and (c) stable. Niemes (1996), for example,

asserts that clarity is critical for teams. Vaughan (1997) and McAlister (1998) emphasize vision clarity and agreement or support is important, and Giordan (1995) stresses clarity and company support. According to Lynn and Akgun (2001), vision stability at the team level may not be critical because there are many paths for achieving the designated ends, and these may be unknown or unknowable at the outset of projects where conditions can be quite uncertain. Therefore it is unlikely that stability is a critical phenomenon at this even more uncertain stage of the vision development process. Thus, stability was not considered to be a relevant dimension in our study.

The first component, vision clarity (VC), refers to having a well-articulated, easy-to-understand target- a very specific goal that provides direction to others in the organization. For Canon, the corporate vision was to "Beat Xerox;" for Honda, it was to become second to Ford in automotive innovation (Hamel and Prahalad, 1989); for United States of America's space program it was to "put a man on the moon and return him safely to the earth by the end the of the decade;" and for Dennis Connor and his America's Cup Team, the vision was to "bring it back" (Niemes, 1996). These visions create a clear image of what the organization is trying to do. Vision clarity is the first step in creating an effective vision. It provides the goal which others can shoot. Without a clear vision, it is unlikely that others will support it because they don't know what they are supporting, nor is the vision likely to be stable and endure over time.

The second vision component, vision support (VS), implies securing the commitment from people throughout an organization for what the company is trying to do. It indicates that people are willing to pitch in to help accomplish the vision – to do whatever it takes to achieve the goal (Lynn and Akgun, 2001). Hanson and Lubin (1988) suggested that for team building to be successful is necessary that all members must be committed to the effort and willing to take responsibility. The team, others, on and off the team, will continually question its direction and will try to change the vision as the project progress. The net results will be delays, confusion and diminished effectiveness.

Although the concept of vision is receiving increased attention at the organizational level, there is a great deal we still do not know regarding vision at the team level. As Brown and Eisenhardt (1995) stated, although this aspect of the team is considered critical, our understanding of exactly what team vision is, and its link with team performance is very weak. Crawford and Di Benedetto (2000) also note that there is surprisingly little research in vision in teams. For their project-level research, Lynn and Akgun (2001) tested three project vision components - clarity, support, and stability— for impact on team performance of radical innovation and incremental innovation. However, we do not know if their findings are applicable for team performance that is measured by objective/quantitative variables. Zhang and Doll (2001) stated that for success new product development teams, the team vision factor is the most critical one needs to be explored in the future research.

A clear and supported vision is important, but if the roles of team members are not clear, it leads to conflict in the team (Gladstein, 1984), and it can confuse and frustrate team

members. Role clarity is an important element of overall team effectiveness (Feistritzer and Jones, 2014). Research on roles in organizations has primarily focused on three role perceptions: role clarity, role conflict, and role ambiguity (Esper et al., 2008). Role ambiguity refers to a lack of clear information about a particular role, whereas role conflict has been defined as incongruence in role expectations between a role incumbent and role senders (Kahn, Wolfe, Quinn, Snoek, and Rosenthal, 1964). Role clarity has simply been referred to as a lack of role ambiguity (Rizzo, House, and Lirtzman, 1970), meaning that an individual team member has a clear understanding of his or her task and has clear information associated with a particular role in the team (Bray and Brawley, 2002). As with vision, within the team, each team member should have a clear understanding of his/her role and how that role interacts with other team roles. The understanding of each other's roles will affect the attitudes of team members towards the team. This increases cohesiveness and collective orientation, promotes autonomy, ownership, job satisfaction, self-accountability and commitment towards the project, organization and team success (Braun and Avital, 2007).

Role clarity has been found to have a significant positive effect on employee job satisfaction (e.g., Teas, 1980), organizational commitment, reduced job-related tension, lower burnout, lower turnover intensions, satisfaction with coworkers (e.g., Agnihotri, Rapp, Kothandaraman, and Singh, 2012; Bauer, Bodner, Erdogan, Truxillo, and Tucker, 2007; Foote, Seipel, Johnson, and Duffy, 2005), and has been found to be a key factor in maximizing employee performance (e.g., Jackson and Schuler, 1985; Shoemaker, 2003). However, the study of role clarity and role conflict thus far has been limited to work roles (e.g., managers, supervisors) within organizations and has not yet examined roles within small interdependent groups (Beauchamp and Bray, 2001; O'Neill, Allen, and Hastings, 2013). Because the individual-level consequences of role clarity are primarily functional for the organization as a whole, it is also important to explore the impact of role clarity on team performance within small interdependent teams. Klein at al. (2009), for example, state that the conceptual role clarity may not have come soon enough for many investigators who had previously sought to assess the efficacy of team building. Although many important team structure variables have been studied (e.g., conflict management, diversity, etc.; Brunetto, Farr-Wharton and Shacklock, 2011), there is a great deal we still do not know regarding role clarity at the team level. Deeter-Schmelz (1997) suggested that one key structural variable that affects team dynamics, should be investigated in future studies is role clarity. Similarly, while there is the considerable and valuable body of work relating the impact of role stress (i.e., role ambiguity, role conflict, and role overload) on team performance outcomes (e.g., Drach-Zahavy and Freund, 2007; Pearsall, Ellis, and Stein, 2009; Savelsbergh, Gevers, van der Heijden, and Poell, 2012), we could not find studies related with the direct impact of role clarity on team performance. Many scholars suggested further investigating the effect of role clarity on team performance (e.g., Puck and Pregernig, 2014; Jehn and Bendersky, 2003; Deeter-Schmelz, 1997; Beauchamp and Bray, 2001).

In light of the conflicting literature on vision and role clarity at the organizational level and the limited empirical research on vision and role clarity at the team level, the general

objective of this study, as shown in Figure 1, was to explore the impact of vision clarity, vision support, and role clarity on team performance. Consistent with our general objective, firstly, we conducted investigations on 9 sequential innovation teams in the computer industry within three companies – Apple, HP, and IBM- on team vision. Products included the Apple II, IIe, III, and Lisa; Hp125, 150; IBM DataMaster, PC, and PSjr. Secondly, after studying on a series of 9 innovation teams at three companies, we empirically tested the impact of vision clarity, vision support and role clarity on overall team performance.

Based on the theory, the structural model was developed to test causal relationships between vision clarity, vision support, and role clarity and team performance. Figure 1 illustrates the proposed model and the causal relationships to test all hypotheses simultaneously in a model.
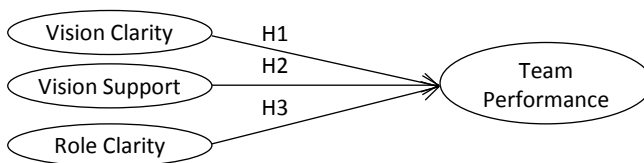

Figure 1. Proposed Model

3.THEORY and HYPOTHESES

3.1.Vision Clarity (VC)

The first component, VC, refers to the extent of communication, understanding, and acceptance of a set of project goals that guide development efforts (Hong, Doll, Nahm, and Li, 2004). The team goals must be well articulated and clearly understood and shared among team members. Zhang and Doll (2001) stated that in order to develop new products successfully, the project team has to deal with the uncertainty from customer, technology and competitors. Although the uncertainty is beyond management's control, at least the teams can focus on clear team vision building and knowledge sharing (Zhang and Doll, 2001). Lynn, Abel, Valentine, and Wright (1999) found that one of the two factors considered most critical of the new product development teams success was a clear team vision. The individual learning literature argues that if individuals have a clear goal, they learn their tasks faster (Covey, 1997). Lucas (1998), for example, states that a clearly defined vision helps individuals arrange their various priorities and keeps them focused on the task, enabling the individual to learn faster. In other words, having a clear team vision should help team members focus better on market, technology, and environmental changes that can be obstacles for rapid team learning and success. Eisenhardt (1989) stated that teams having a clear vision can reduce cycle time. Similarly, Kessler and Chakrabarti (1996) argued that teams without a clear vision (having ambiguous project concepts) promote suspicion and conflict on a team regarding what should be produced, which can result in time-consuming, readjustments, and debates.

In our initial study of 9 innovation teams, all the extraordinarily successful innovations had a clear vision – the team members knew what the team was trying to do- the features, target market, price point were clear. Though not everything was spelled out, team members knew what they were trying to do –what their mission was. As an example, the IBM PC team had a crystal clear vision of its goal. As Larry Rojas, the Director of Planning for the IBM PC team recalls: "We were trying to out Apple Apple." The PC was to be a personal computer that would be versatile enough to be used at home, at school as well as by small businesses. The PC's vision was established by a task force, many of whom were recruited from the DataMaster (the precursor to the PC). The vision or blueprint was a plan of when the PC should be launched, what features and benefits it should provide, who the target market would be, and where it would be sold. The plan was established, understood, and agreed to by Frank Cary, IBM's CEO, Bill Lowe the initial project leader, and the other members of the PC task force team. The team's objective, as Jan Winston, one of the early PC task force members describes, was "to execute the task – force plan." The result of this process was that the PC team had a very clear vision and a sense of purpose.

In contrast to the extraordinarily successful new product teams, the failed Apple Lisa project lacked a clear vision. The vision on the Lisa was ambiguous and vague. The overarching goal of Lisa was to become an office productivity tool, but an office productivity tool can be anything from a fax machine to a ruler. As a result, team members did not agree on what the vision of Lisa was supposed to be nor what it was supposed to do. Over time, the vision changed; the features and functionality of the Lisa grew, and with it, so did the cost. What began as a $2,000, 8-bit computer, became a $9,995, 16-bit computer. Unfortunately, the market was not ready for a $10,000 personal computer; sales for the first year fell woefully below forecast. The first year Lisa forecast called for 1983 sales to reach 50,000 units, but only 11,000 units were actually sold. Repeated attempts to revive to Lisa failed, and in April 1985, at an Apple Board meeting, the Lisa was cancelled and dropped entirely. Consistent with literature in VC and our study of 9 innovations, we hypothesize:

Hypothesis 1 (H1): Vision Clarity is positively related to team performance.

3.2.Vision Support (VS)

A clear vision is one important component of an effective vision but, the vision must also be shared and supported by others on the team. VS allows members in the team to understand how they might work together or align themselves to play a role in realizing that vision. Lewis (2001) explains, if everyone does not agree on the vision, each person will try to achieve the outcome he or she imagines, often with disastrous results. Teams with an innovative team climate are characterized by a high cohesion between team members, high levels of support and challenge, good sharing and implementing of new ideas, and clarity of tasks and objectives (Anderson and West, 1998; Bain, Mann, and Pirola-Merlo, 2001). Briner, Geddes, and Hastings (1996) stated that the most significant success factor for project teams is that they have a common and shared idea of what

difference they are trying to make as a result of the project. Rose et al. (2006), for example, stated that promoting a unified team vision would seem to be important; professionals need to work for generating an atmosphere of trust between team members and then developing problem-solving methods where all members of the team are encouraged to contribute. Similarly, Katzenbach and Smith (1992), identify four team basics that need to be present for teams to perform well. The team must: (1) Have a common purpose, (2) establish goals for individual and collective accountability, (3) agree upon a common objective for getting the work done, and (4) have complementary skills.

In our study of 9 sequential innovations, two examples of projects that secured good support or buy-in for the vision were the successful IBM PC and Apple IIe. For the IBM PC, by having Cary as the PC's executive sponsor, by default, the vision had top management support. And by having virtually all the people who had formulated the initial vision from the task force, being in the actual PC team, the vision was supported by the team members as well. On the Apple IIe, team members similarly bought the vision of the project. Mike Connor, who was the project leader succeeding from Taylor Pohlman, describes the vision on the Apple IIe: "There was a clear sense of mission that everyone really bought." Barry Yarkoni, a marketing manager on the Apple IIe, concurs, "There was absolute agreement by everybody on the vision of the IIe."

In contrast, the unsuccessful projects, such as the Apple III, HP's 125 and 150, and the IBM PCjr exhibited a different pattern. On the Apple III, individual team members had vision about what the Apple III should be and who would be the target market; unfortunately, these visions varied for different team members in different functional disciplines. The marketing people had one vision and the engineering people had another. As Yarkoni, who was the early marketing manager for the Apple III explains:

> *The engineering people had a certain vision of what the product should be which was basically a souped up Apple II. The marketing people were saying, 'oh my gosh we've got a cash cow in the Apple II that's generating pot fulls of money. The last thing we want to do is to start cannibalizing it for no good reason. We want a product that will take us into some new markets and give us some potential new customers that are not being serviced that are not buying Apple II's and we want the Apple III to be a professional machine. So meanwhile the engineers had loaded it up with goodies in terms of graphics and sound and we much preferred goodies that made it oriented toward businesses professionals. So, right off the bat we had a major war going on between where we needed the product to go from a business point of view and where engineering wanted the product to go because it was fun.*

The lack of vision support was one of the primary reasons underlying the fact that it took Hewlett Packard over 12 years to succeed in the personal computer marketplace. HP experienced a series of setbacks in its efforts to compete in the PC business. The main source of the trouble was that engineers in HP had a mindset to be innovative- "to make a substantial technical contribution" despite a vision that was established by HP's

consultants that indicated HP's PC must be fully IBM-compatible. The idea of being an IBM clone maker was repugnant to most engineers in HP and they refused to accept it. Larry Kelly, the HP 125 and 150 R&D Lab Manager explains:

> *The test [at HP] always used to be, when you had an idea or were working on a project – what's the contribution? What have you done that nobody's done before? That [mentality] works fine for instruments but that's in direct contrast with being compatible. So you've got a company that's 35 or 40 years old at the time with $1 or $2 billion in revenue. And you've got all these engineers thinking. 'You can't wear your boots unless you know [that] you've done something nobody else's done - you can't come to work.' Overcoming that mentality was very hard. It took them [HP engineers up to its senior management] four or five years to realize that it [an HP PC] had to be compatible [with IBM] first and then maybe you could innovate after that.*

As a result, many of the HP engineers did not buy-into the vision of designing and building a clone of the IBM PC. In a somewhat similar example, the initial vision for the IBM PCjr. was a powerful, versatile home computer that could compete with the PC at the low-end for home/personal use. But senior management did not agree with the team's vision and as a result, a conflict arose. Bill Sydnes, the IBM PCjr. System Manager (the overall project manager), recalls his team's versus management's position:

> *The IBM PCjr. was originally intended to have a large number of peripherals on it that would have allowed it to compete at the low end of the PC product line. It would have obliterated the low end of the PC product line. IBM's position was, we're not going to allow you to do that.*

Behind the scene, another dynamic was unfolding. IBM was having second thoughts about selling a home/game computer. Company executives were concerned about being perceived as a home computer company. After all, they were International "Business" Machines; not International "Home" Machines. As David O'Connor, who took over from Sydnes as the PSjr.'s System Manager, recalls:

> *There were some guys at the top of the corporation who really believed that they didn't want the IBM logo in the retail or consumer distribution channel at the time. [They said] 'IBM is not a consumer company. They are a business company. They sell to professionals and businesses and large corporations … and this home computer stuff is not for us.' The instant there was any problem with the program, it gave those who felt IBM should not be in that market reason to suggest that we delay the program.*

What began as a skunk work quickly changed to include a high degree of involvement from top management. Senior management came in and altered the rules. They required that the PCjr. be 1) fully compatible with the PC, 2) de-functionalized so not to cannibalize the low-end of the PC market, and 3) geared to both the home and as well as the business

markets. The result of mid-course changes was that Sydnes left. His leaving created a void that was difficult to fill. His leaving combined with the changes, delayed the project, altered its target market and reduced its technical capabilities. Needless to say, the product failed. Therefore consistent with literature in VS and our study of 9 innovations, we hypothesize:

Hypothesis 2 (H2): Vision support is positively related to team performance.

3.3.Role Clarity (RC)

Role clarity, which is sometimes referred to by the contrasting term, role ambiguity, is considered to have important consequences for the performance and success of teams in business and industry (Rizzo et al, 1970). According to role theory (Rizzo et al. 1970), role clarity refers to ''the degree to which required information is provided about how the employee is expected to perform his or her job'' (Teas, Wacker, and Hughes, 1979, p. 355). One key of measurable indicators of team structure, as identified by previous research, is the clarity of its goals and members roles (Gladstein, 1984; Deeter-Schmelz, 1997). As Drach-Zahavy and Freund (2007) noted, two types of structuring, mechanistic and organic, are distinguished in terms of how to manage control of teams' job accomplishment and how to differentiate and coordinate members' roles within these teams. For example, Richardson (2010, p.86), identifies shared objectives and specified roles as criteria for assessing real teams. Newman and Wright (1999) indicated, teams are "characterized by high task interdependence, high role differentiation, high task differentiation, and distributed expertise" (p. 377). In this context, when forming the team and selecting the members it must be considered what roles the team needs to complete its task (Launonen and Kess, 2002). This coincides with the words of Rogers (2009), "When teams are formed and even after they have existed for a period of time, it is necessary that each team member understand and be reminded… (of) …their role and how they contribute to the team and the organization's goals."

Team members consider a team as a group of people working together on the basis of shared perception, a common purpose, agreed procedures, commitment, cooperation and resolving disagreements openly by discussion. Role clarification of team emphasizes communication among team members, and thus it is likely that an increase in the level and quality of communication between team members will impact their effectiveness (Klein et al., 2009). Similarly, Kiesler (1978) and Gladstein (1984) suggested that as higher levels of role clarity exist within teams, the more likely each member is to communicate openly in team settings. Forsyth (1999) stated that role clarity may have both psychological (e.g., self-efficacy, job satisfaction) and behavioral (e.g., performance) implications not only for role occupants but also for the rest of the team. According to Hartenian et al. (1994), increased role clarity of individual employees leads to better individual job effectiveness. Stewart et al. (2005) suggested that the more each team members understands and performs his or her task role, the more likely the team's goals will be effectively achieved. Gladstein (1984), suggested that team structure, which includes role clarity, has a direct influence on team effectiveness. MacMillan (2001), for example, described six

characteristics of a high performance team: (1) Common purpose, (2) crystal clear roles, (3) accepted leadership, (4) effective processes, (5) solid relationships, and (6) excellent communication.

Team members' roles can be viewed as subsets of the behaviors exhibited within the team processes; they manifest individual level contributions to these team processes (Beersma et al., 2009). Therefore, one way of building high performing team is by identifying individual preferences to approach tasks and interact with others, that is to say, identifying individual team role preferences (Aritzeta, Ayestaran and Swailes, 2005). When roles and objectives are clearly delineated, the individuals' attitudes toward the teamwork are enhanced (Ruiz-Ulloa and Adams, 2004). Furthermore, as Moynihan and Pandey (2007) noted, role clarity has an important motivational effect on job satisfaction, organizational commitment, and job involvement (see Bauer et al., 2007; Foote et al., 2005). Ruiz Ulloa and Adams (2004) discussed several characteristics that critically impact the effectiveness of teams: productive conflict resolution, positive communication, role clarity, accountable interdependence, clearly stated goals, common purpose, and psychological safety. Thus it appears that team members become more effective when they do not lack crucial information regarding their roles. Therefore consistent with literature in team role clarity, we hypothesize:

Hypothesis 3 (H3): Role clarity is positively related to team performance.

4.RESEARCH METHODOLOGY

4.1.Sample and Data Collection

Data were collected from executive masters students in a business program at a university in the Northeast Region of the United States. To avoid common method bias, we designed a research protocol that involved surveying executive masters students enrolled in several sections in a Marketing Strategy course. For this Marketing course, students competed in teams of four to six students in a computer simulated marketplace for six periods or rounds over eight weeks. The computer simulation was specially created and written for this course and is used by several leading business schools such as Insead and Wharton. Students were surveyed after they had completed the simulation – six rounds. Also prior to completing the six "real" rounds, two practice round were played. Their survey-responses were matched to their final results from the simulation, e.g., sales, profits and market share. The outcomes were objective/quantitative measures calculated by the simulation.

We first pilot - tested the survey with ten students from three different Masters of Business programs. After receiving the returned surveys, we corrected several questions in which respondents had difficulty answering or indicated were unclear. These pilot surveys were not used in the final dataset. Once the surveys were refined, we sampled 75 students who were in two sections of Marketing Strategy in an Executive Masters of Business program. We received a 95% response rate. These students were all full-time working

professionals with a mean age of 31.8 and standard deviation of 9.2. They came from locations across the United States – from New Jersey to California.

4.2.Measures

To test our hypotheses, a questionnaire was developed based on previous research from several disciplines including (1) new product development (e.g., Meyer and Pruser, 1993; Millson, Raj, and Wilemon, 1992; Nijssen, Arbouw, and Commandeur, 1995; Chiessa, Coughland, and Voss, 1996), (2) marketing (e.g., Day, 1994; Moorman, 1995), (3) knowledge management (e.g., Davenport and Prussak 1998; Lynn, 1998; Roth and Kleiner, 1998) and (4) psychology (e.g., Larson and LaFasto 1989; Locke, Shaw, Saari, and Latham, 1981; O'Leary-Kelly, Martocchio, and Frink, 1994).

VC was measured with seven items. An example item was: 'Prior to beginning the real rounds (after the practice rounds), the team had a clear vision of the required product features'. (Prior to completing the six "real" rounds, two practice round were played). VS was measured with one item. The item was: 'Overall, team members supported the vision of our company'. RC was measured with three items. An example item was: 'The roles of team members on this project were very clear'. Each construct was measured using multiple items and Likert type 0 to 10 scale (0 = strongly disagree to 10 = strongly agree). The dependent variable (Team Performance) was measured with cumulative profit – and was calculated by the simulation at the end of the game in terms of Dollars ($). (Our constructs are shown in Appendix).

4.3.Analysis and Results

The partial least squares (PLS) approach (Sosik, Kahai, and Piovoso, 2009; Chin, 1998) was used to path modelling to estimate the measurement and structural parameters in structural equation model (SEM). In the group and team literature, Sosik et al. (2009) have suggested that PLS data analytical technique is a powerful means for organizational research because PLS (a) can test multivariate structural models with a limited sample size, (b) can be applied to develop theory in early stages of research, and (c) can use the bootstrapping technique to determine the 95% confidence intervals of the path coefficients, providing more accurate findings. As we had a relatively small sample size at the team member level (N=75), we followed Sosik et al.'s (2009) suggestion to use the PLS approach. The path model was developed and tested applying the statistical software application, SmartPLS 2.0 (Ringle, Wende and Will, 2005) for measurement validation and testing the structural model. SmartPLS uses a PLS regression technique which employs a component-based approach for estimation. It places minimal restrictions on sample size and residual distributions (Ringle et al., 2005).

4.4.Measurement Validation

Firstly, an exploratory factor analysis was performed to assess the dimensionality of the constructs of VC and RC by using principle component with Varimax Rotation.

Unidimensionality was exhibited in this two constructs as only one factor surfaced in each set of analyses. Additionally before doing any further analysis, the reliability of constructs items were tested. Appendix shows the constructs whose eigenvalues are greater than one, factor loadings, crombach's alpha for each construct, and variation explained by each item. Alpha coefficients of constructs are greater than 0.75 which indicates good reliability as suggested by Nunnally (1978).

Secondly, to assess the psychometric properties of the measurement instruments, a similar procedure to that of Henseler, Ringle and Sinkovics (2009) and MacKenzie, Podsakoff and Jarvis (2005) was performed, using reflective indicators for all constructs. With respect to constructs, the standardized loadings of indicators on their respective constructs ranged 0.74 to 0.96, which are above the threshold of 0.70 (Chin, 1998) (see the Appendix). Furthermore, each indicator's standardized loading on its respective construct was highly significant (p<0.01). As suggested by Henseler et al. (2009) and MacKenzie et al. (2005), indicators of each construct were highly correlated, reflecting the same underlying construct. The scores of a construct are correlated with all other constructs' indicators in its own block (Chin 1998).

Internal consistency reliability was evaluated by means of composite scale reliability (CR). For all measures, the PLS-based CR ranged from 0.84 to 0.95, which exceed the suggested threshold of 0.70 or above (Chin, 1998; Fornell and Larcker, 1981). Convergent validity was evaluated by inspecting the average variance of extracted (AVE). AVE for each measures was exceeded the 0.50 cutoff value, consistent with recommendation of Fornell and Larcker (1981). In addition, convergent validity was evaluated by inspecting the standardized loadings of the measures on their respective constructs (Chin, 1998), and all measures were found to exhibit standardized loadings that exceed .70. Appendix also shows standardized indicator loadings, t values, CR and AVE values. Next, the discriminant validity of the measures was assessed. As suggested by Fornell and Larcker (1981), the square root of AVE for each construct was greater than the latent factor correlations between pairs of constructs. The means, standard deviations, the square root of AVE for each construct, and the correlation coefficients for all constructs were displayed in Table 1. As shown in Table 1, the largest correlation was between vision clarity and role clarity (r=0.66), which is less than the square root of the AVE for vision clarity (0.83) and role clarity (0.94). Moreover, as suggested by Chin (1998) and Kleijnen et al., 2007), the theta matrix (Θ) was inspected, and no item was found to cross-load higher on another construct than it did on its associated construct (Chin, 1998). Consequently, the determination was that all constructs exhibit satisfactory discriminant validity. These findings suggest that VC, VS and RC constructs are reliable, valid.

Table 1. Correlations of Latent Variables

	Latent variables	Mean	SD	1	2	3	4
1	Team Performance ($million)[a]	59.73	35.17	n.a.			
2	Vision Clarity	7.77	1.74	.40**	**0.83**		
3	Vision Support[a]	8.59	1.74	.27*	.57**	n.a.	
4	Role Clarity	8.30	1.72	.17	.66**	.51**	**0.94**

Notes: Significance at **p<.01, *p<.05 (two-tailed); N=75; the square root of AVE was shown as bold numbers on the diagonals; n.a.: Not applicable; [a]Single indicator construct.

The check for multicollinearity is needed because it causes parameter estimation problems (Hair, Ringle, and Sarstedt, 2011). To detect multicollinearity, variance inflation factors (VIFs) and tolerances were assessed for each construct component using IBM SPSS 22.0 for Windows. The VIFs of indicators ranged from 1.544 to 2.013; the average was 1.70. Tolerances ranged from 0.497 to 0.648. All VIFs and tolerances were in acceptable threshold levels (VIF< 3.3, tolerance>0.20) (Hair et al., 2011). These findings indicated that multicollinearity did not seem to be problematic.

4.5. Hypothesis Testing

SmartPLS 2.0, which allows for explicit estimation of latent variable scores, and the bootstrapping resampling method were used to test the proposed model (Chin, 1998). As suggested by Hair et al., (2011), this procedure entailed generating 5000 subsamples of cases randomly selected, with replacement, from the original data. Path coefficients were then generated for each randomly selected subsample. T-statistics were calculated for all coefficients, based on their stability across the subsamples, indicating which links were statistically significant. Table 2 demonstrates hypotheses, hypothesized links, the standardized path coefficients, t-values, R2 value, Q2 value and results of all hypotheses. As shown Table 2, It was found that values of Vision Clarity (β=0.476, p<0.01) is positively associated with team performance, supporting H1. However, no statistical significant association between vision support (β=0.096, p>0.05), role clarity (β=-0.194, p>0.05) and team performance was found, which indicated no support for H2 and H3.

Table 2. The Results

Hypothesis	Hypothesized links	Path coefficient (β)	t values	Results
H1	Vision Clarity $\rightarrow$ Team Performance	0.476*	3.075	Supported
H2	Vision Support $\rightarrow$ Team Performance	0.096	0.923	Not
H3	Role Clarity $\rightarrow$ Team Performance	-0.194	1.334	Not
R^2 = 0.19				
Q^2 = 0.13				

Note: *p<.01

Findings also indicate that the proposed model explains the 19% of the variance in team performance. In another word, VC, VS, and RC variables together explain the 19% of the variance ($R2$=0.19) in team performance. The R2 index of the variables demonstrated a satisfactory level of predictability (Chin, 1998). In addition, Stone-Geisser's Q2 were

measured using blindfolding procedures (Henseler et al., 2009). Q2 value ranged above the threshold value of zero (Q2=0.13), indicating that the variables have predictive relevance for team performance, thus confirming the overall model's predictive relevance.

5.DISCUSSION

This paper attempted to offer a contribution to the team performance literature by presenting a model for researchers and project managers to understand potential interrelationships among VC, VS, RC and team performance. As a result of our analysis, we found that VC was significantly associated with team performance. This finding is consistent with the scholarship and business press citing the importance of "vision" to success (Lynn and Akgun, 2001; Revilla and Cury, 2009; Revilla and Rodriguez, 2011; Patanakul, Chen, and Lynn, 2012). For example, Revilla and Cury (2009), in their empirical study, have revealed that clarity of project purposes has a positive influence in the new product performance in terms of process outcomes and teamwork. Patanakul et al. (2012), by studying 555 new product development projects, found that among the control variables, VC is the most important predictor of team performance. For their project-level research, Lynn and Akgun (2001) developed scales and definitions for three project vision components - clarity, support, and stability—and tested these for impact on performance of radical innovations. Their findings indicate that project VC is significantly associated with new product development teams' success. Cole, Harris, and Bernerth (2006) explored the relationship of vision and employees' commitment to the change initiative that was addressed in the vision and found that VC was significantly related to increased job satisfaction, reduced role ambiguity, and lowered intent to turn over among employees, even among those who doubted the appropriateness of the changes or felt that the changes were poorly executed. Similarly, Revilla and Rodriguez (2011), studying the team vision on 78 new product development teams, found that in low ambidexterity strategies clarity dimension is significantly associated with teamwork. Similarly, Rice et al. (1998) found that for successful radical innovation, teams should have a clear vision, but be flexible with their project plans.

In this study, we did not find any direct and significant association between VS and Team Performance. This finding is somewhat contradictory to the existing scholarship. For example, Bessant, Caffyn, and Gallagher (2001), by investigating six incremental innovations, found that team VS impacts success for continuous innovation improvements. Zhang et al. (2012), by studying multisource and multimethod data collected at 3 points in time (361 followers in 74 work teams), found that team shared vision is positively associated with individual performance and team effectiveness. Similarly, Yukelson (1997), stated that core components to consider in building a successful team include having a shared vision and unity of purpose, collaborative and synergistic teamwork, individual and mutual accountability, an identity as a team, a positive team culture and cohesive group atmosphere, open and honest communication processes, peer helping and social support, and trust at all levels. However some studies are consistent with our finding. For example, Lynn and Akgün (2001), in the case of project vision support, the link to new product teams' success has been found to depend on where the support comes from (i.e., team

members, team managers, or top management), and found that vision support by team manager is significantly associated with new product success, whereas the support by team members and by top management is not. Reid and Brentani (2010), stated that the findings on VS are equivocal and pointing to need to further investigate the support dimension. Perhaps what is happening here is that teams typically have little knowledge about market and technology, therefore vision agreement or support may vary depending on the team members. Perhaps another way to look at this is team members can voice support for vision, but actions speak louder than words.

In this study, we also did not find any direct and significant association between RC and Team Performance. Findings in the literature on this subject are complicated. Interestingly, no research has been conducted so far on the direct effect of role clarity in literature whereas there is a remarkable body of work on the relationship of role stress(e.g., Savelsbergh et al., 2012; Drach-Zahavy and Freund, 2007; Pearsall et al., 2009) with team conflict (e.g., Jehn, 1997; De Wit, Greer, and Jehn, 2012; O'Neil et al., 2013; Hülsheger, Anderson, and Salgado, 2009) The results of the aforementioned study are in agreement with those of ours inspite of the fact that there are some findings suggesting that role stress, role ambiguity, role conflict, and role overload have some negative impact on team processes and performance outcomes (e.g., Drach-Zahavy and Freund, 2007; Pearsall et al., 2009). There are also some studies finding no significant correlation between role ambiguity and team performance(e.g., Savelsbergh et al., 2012). For instance, Savelsbergh et al.(2012) in their study composed of 283 subjects, a total of 38 project teams, they could not find any effect of team role stress on team performance. As a result of the investigation, although there was a negative correlation between team role conflict and team quantitative role overload and self-rated team performance, there was no significant correlation between role ambiguity and team performance. Similarly, Jehn (1997) offered three distinct types of team conflict, namely, task conflict, relationship conflict, and process conflict. Specifically, it was argued that relationship conflict - involving interpersonal tensions, frictions, and resentment—can harm team performance, task conflict - involving different ideas, perspectives, and viewpoints regarding the work itself— has the potential to improve team performance, and process conflict - involving incompatibilities in views about how the work should be accomplished (e.g., distribution of workload, order of tasks to be completed) - can be harmful for team performance because they create inefficiencies. However, research findings for the effects of conflict types on team performance have been mixed (See De Wit et al., 2012: O'Neil et al., 2013). In particular the effects of task conflict that may occur as a result of role ambiguity, which refers to "disagreements among group members about the tasks being performed" (Jehn and Bendersky, 2003, p. 200), do not seem to be clear. Some researchers found a beneficial effect of task conflict (Behfar, Mannix, Peterson, and Trochim, 2011; Jehn, 1997), others found a negative one (Langfred, 2007), some even found no significant effect (De Wit et al., 2012; O'Neil et al., 2013; Hülsheger et al., 2009). For example, De Wit et al. (2012), in their updated meta-analysis study, found that team performance was negatively related to relationship conflict and process conflict, whereas the relation was essentially zero for task conflict. O'Neil et al. (2013), in their meta-analysis study, found that the impact of task conflict, relationship conflict, and process conflict on team innovation

performance were essentially zero. Similarly, Hülsheger et al.'s (2009) meta-analysis found a null relation between task conflict and team performance. O'Neil et al. (2013) stated that, whereas the task conflict and the relationship conflict appears to generally have small direct relations to team performance, theory would suggest the plausibility of stronger relations.

6.IMPLICATIONS

First of all, this study has explored the impact of vision components and RC on team performance at the team level. Although these concepts have been largely discussed at the organizational level, only recently the discussion of the impact of team vision and RC on team performance have started and there are still some empirical issues to be tapped. This is an attempt to fill some of those gaps that will allow the development of the team vision and role definition, as well as how exactly they impacts team performance.

This study helps to understand the important components of vision and RC on team level that contribute to the development of team success. Furthermore, the empirical analysis found that team vision is vital for team performance. These findings emphasized the importance of a clear vision to minimize the effects of team diversity and to promote team success.

From this study, the implications for managers and human resources practitioners are three fold. First, human resources practitioners could play a more proactive role in identifying teams that could benefit from team building. Specifically, the finding that the VC component improved performance over the other team vision components could benefit human resources practitioners and organizational managers by providing increased clarity into ways in which leaders may best direct their teams (i.e., being clear about vision and setting goals).

Second, for the more successive teams, managers either need to set up to the plate be a visionary and create a clear vision for the team or allow/force the team to develop the vision themselves. Either way, these types of teams will be more successful if teams have a clear vision. In other words, team members must be clear about objectives and obtain feedback on the achievement of these objectives. Conflicting goals will impede integrated work, because team members are likely to be distracted by conflict and unclear about objectives.

Third, although there exists no correlation between role clarity and team performance based on the results of our sstudy,there is the considerable and valuable body of work demonstrating detrimental effects of role conflict and unclarity of role on team processes and performance outcomes (e.g., Drach-Zahavy and Freund, 2007; Pearsall et al., 2009). In this context, Project managers perceiving signals of role ambiguity should stimulate members to collectively explore and reflect on the role division in their team, opening up the opportunity to experiment with a different role division and a reallocation of resources, to safeguard the effectiveness of the individual team members as well as of the

team as a whole (see also Charbonnier-Voirin, El Akremi, and Vandenberghe, 2010; Savelsbergh et al., 2012). As Drach-Zahavy and Freund (2007) noted,   when each role within the team is defined, which leads him or her to see 'the bigger picture' and cooperate with others.

7.LIMITATION and FUTURE RESEARCH

Our study has a few limitations. Those limitations, however, offer future research opportunities. We have identified six such opportunities. First and one potential limitation of our study is the use of a student sample, which may weaken the generalizability of the results to teams in organizations that exist for longer periods of time and have a stronger impact on teammates' real lives. But, in many studies, related to the team performance, student samples were used (Schippers, Homan, and Knippenberg, 2012; Pieterse, Knıppenberg, and Dierendonck, 2013). It is unlikely that students differ from other populations in their behavior in achievement settings (Brown and Lord, 1999). To maximize generalizability to organizations, we sampled master students who were working professionals with a mean age of 31.8. They came from locations across the United States – from New Jersey to California. At the same time, we should recognize that another concern might be that the teams involved were student teams, rather than teams in organizations, which may raise the question of whether these findings can be generalized to field contexts. However, complementing experimental research with evidence from teams in organizations would thus seem equally important for future research.

Second, past studies on team performance suggests that there are several factors such as team characteristics (e.g. team size) and socio-demographics (e.g. team age) that influence the team successes (Rico, Sanchez-Manzanares, Gil, and Gibson, 2008; Choi, Lee, and Yoo, , 2010). Control variables such as team size and team age weren't used in our study. Future research should take into consideration the more direct effects of these factors as they examine the impact of vision components on team performance.

Third, our study treated vision as a two dimensional construct. In future research, the vision constructs can be expanded and empirically tested. For instance, as Lynn and Akgun (2001) state, 'perceived-correctness' and 'time/place-in-development' of vision can be added to the vision components in our model. For instance, when the project progresses over time, the team's perception of the vision as being 'correct' may change.

Fourth, in our study, the use of a one-item scale to measure VS may be problematic. The item has not been shown to demonstrate adequate psychometric properties. However, our finding regarding to the VS is consistent with a number of findings on the impact of vision support on team performance (Lynn and Akgun, 2001; Reid and Brentani, 2010). Regarding VS, future research should replicate the current findings with other measures of VS.

Fifth, although a direct association between RC and team performance has not been found in our study, it seems plausible that role conflict may affect team performance through the mediating function of role clarity (see Beauchhamp and Bray, 2001). Future research

should examine how the level of role clarity influences the relationships between role conflict and team performance.

Sixth, and finally, as O'Neil et al. (2013) noted, there are three theoretically plausible contingencies of team conflict–team performance relations: the team task type (routine and nonroutine), the type of performance measurement method (self – ratings, supervisor ratings, expert ratings of output), and the teamwork setting (course-based student teams, organizational teams, and laboratory teams). Jehn (1995) suggested that task conflict is likely to facilitate team performance when the task is nonroutine. In contrast, task conflict in routine, predictable work serves less purpose and, indeed, may be inefficient and counterproductive (Jehn and Mannix, 2001). Performance measures taken from other sources (self – ratings, supervisor ratings, expert ratings of output) could generally can be more strongly related to vision and role clarity (O'Neil et al., 2013). Similarly, in the longer term teams, the implications of the conflict are more profound and the increased duration makes the occurrence of conflict spirals more likely (see O'Neil et al., 2013). We measured team performance with objectives measures, and our sample was course-based student teams. Thus future research should take into consideration, how task type, performance measurement method and team setting impacts the relationship between VC, VS, and RC and team performance.

8.CONCLUSION

Team vision and role clarity in teams are important, however, we surprisingly know little about them. In this research, we tried to shed light on team vision, its components, role clarity in teams and their impact on team performance. Within this context, we used a two-step approach. In first step, we analyzed nine new product development teams in three firms regarding team vision and its components that included: Apple, IBM and HP. The products investigated were the Apple II, IIe, III, and Lisa; Hp125, 150; IBM DataMaster, PC, and PSjr. Later, we empirically tested the impact of the two components of vision (VC, and VS) and RC on team performance. We found that VC has a positive effect on the team performance. We also found that, VS and RC have not any significant effect on the team performance.

REFERENCES

- Agnihotri, R., Rapp, A., Kothandaraman, P., and Singh, R.K. (2012), 'An Emotion-Based Model of Salesperson Ethical Behaviors,' J Bus Ethics, 109, 243–257.
- Anderson, N.R., and West, M.A. (1998), 'Measuring Climate for Work Group Innovation: Development and Validation of the Team Climate Inventory (TCI),' Journal of Organizational Behavior, 19, 235-258.
- Aritzeta, A., Ayestaran, S., and Swailes, S. (2005), 'Team Role Preference and Conflict Management Styles,' The International Journal of Conflict Management, 16, 157-182.

- Bain, P., Mann, L., and Pirola-Merlo, A. (2001), 'The Innovation Imperative: The Relationships Between Team Climate, Innovation, and Performance In Research and Development Teams,' Small Group Research, 32, 55-73.
- Bauer, T. N., Bodner, T., Erdogan, B., Truxillo. D. M., and Tucker, J. S. (2007), 'Newcomer Adjustment During Organizational Socializations: A Meta-Analytic Review of Antecedents, Outcomes, and Methods,' Journal of Applied Psychology, 92, 707-715,
- Beauchamp. M., and Bray, S. (2001), 'Role Ambiguity and Role Conflict Within Interdependent Teams,' Small Group Research, 32, 133-157.
- Beersma, B., Hollenbeck, J. R., Conlon, D. E., Humphrey, S. E., Moon, H., and Ilgen, D. R. (2009), 'Cutthroat Cooperation: The Effects of Team Role Decisions on Adaptation to Alternative Reward Structures,' Organizational Behavior and Human Decision Processes, 108, 131–142.
- Behfar, K. J., Mannix, E. A., Peterson, R. S., and Trochim, W. M. (2011), 'Conflict in Small Groups: The Meaning and Consequences of Process Conflict,' Small Group Research, 42, 127–176.
- Bessant, J., Caffyn, S., and Gallagher, M. (2001), 'An Evolutionary Model of Continuous Improvement Behavior,' Technovation, 21, 67-77.
- Braun, F., and Avital, M. (2007), 'Good Project Management Practices Drive More Than Project Success: Learning, Knowledge Sharing and Job Satisfaction in It Project Teams,' Proceedings of the 13th Americas Conference on Information Systems at Colorado, August 9–12, pp. 1–11.
- Bray, S. R., and Brawley, L. R. (2002), 'Role Efficacy, Role Clarity, and Role Performance Effectiveness,' Small Group Research, 33, 233-253.
- Briner, W., Geddes, M., and Hastings, C. (1996), Project Leadership, Aldershot, UK: Gower.
- Brown, D.J., and Lord, R.G. (1999), 'The Utility of Experimental Research in The Study of Transformational/Charismatic Leadership,' Leadership Quarterly, 10, 531–539.
- Brown, S.L., and Eisenhardt, K.M. (1995), 'Product Development: Past Research, Present Findings, and Future Directions,' Academy of Management Review, 20, 343-378.
- Brunetto, Y., Farr-Wharton, R., and Shacklock, K. (2011), 'Supervisor–Nurse Relationships, Teamwork, Role Ambiguity and Well-Being: Public Versus Private Sector Nurses,' Asia Pacific Journal of Human Resources, 49, 143–164.
- Charbonnier-Voirin, A., El Akremi, A., and Vandenberghe, C. (2010), 'A Multilevel Model of Transformational Leadership and Adaptive Performance and The Moderating Role of Climate For Innovation,' Group and Organization Management, 35, 699-726.

- Chiessa, V., Coughland, P., and Voss, C.A. (1996), 'Development of a Technical Innovation Audit,' Journal of Product Innovation Management, 13, 105-136.
- Chin, W.W. (1998), 'The Partial Least Squares Approach For Structural Equation Modeling,' In Modern Methods for Business Research, ed. G.A. Marcoulides. Mahwah, NJ: Lawrence Erlbaum Associates, pp. 295–336.
- Choi, S.Y., Lee, H., and Yoo, Y. (2010), 'The Impact of Information Technology and Transactive Memory Systems on Knowledge Sharing, Application, and Team Performance: A Field Study,' MIS Quarterly, 34, 855-870.
- Cole, M. S., Harris, S. G., and Bernerth, J. B. (2006), 'Exploring the Implications of Vision, Appropriateness and Execution of Organizational Change,' Leadership & Organization Development Journal, 27, 353-367.
- Covey, S.R. (1997), 'Accelerated learning,' Executive Excellence, 14, 3-4.
- Crawford, M.C., and Di Benedetto, A.C. (2000), New Product Management, (sixth ed.), New York: The McGraw-Hill companies.
- Davenport, T. H. and Prusak, L. (1998), Working Knowledge: How Organizations Manage What They Know, Boston, Mass: Harvard Business School Press.
- Day, G. S. (1994), 'The Capabilities of Market-Driven Organizations,' Journal of Marketing, 58, 37-52.
- De Wit, F. R. C., Greer, L. L., and Jehn, K. A. (2012), 'The Paradox of Intragroup Conflict: A Meta-Analysis,' Journal of Applied Psychology, 97, 360–390.
- Deeter-Schmelz, D. R. (1997), 'Applying Teams to Logistics Processes: Information Acquisition and The Impact of Team Role Clarity and Norms,' Journal of Business Logistics, 8, 159-178.
- Drach-Zahavy, A., and Freund, A. (2007), 'Team Effectiveness Under Stress: A Structural Contingency Approach,' Journal of Organizational Behavior, 28, 423-450.
- Eisenhardt, K.M. (1989), 'Making Fast Strategic Decision in High-Velocity Environments,' Academy of Management Journal, 32, 543-576.
- Esper, T., Fugate, B., and Rapert, M.I. (2008), 'Enhancing Relationships Within Groups: The Impact of Role Perceptions Within Logistics Teams,' Journal of Relationship Marketing, 7, 121-150.
- Feistritzer, N.R., and Jones, P.O. (2014), 'A Proof-of-Concept Implementation of a Unit-Based Advanced Practice Registered Nurse (APRN) Role: Structural Empowerment, Role Clarity and Team Effectiveness,' Nursing Clinics of North America, 49, 1-13.
- Foote, D. A., Seipel, S. J,, Johnson. N. B., and Duffy, M. K. (2005), 'Employee Commitment and Organizational Policies,' Management Decision, 43, 203-219.

- Fornell, C. and Larcker, D. (1981), 'Evaluating Structural Equation Models With Unobservable Variables and Measurement Error,' Journal of Marketing Research, 18, 39–50.
- Forsyth, D. R. (1999), Group dynamics (3rd ed.), Belmont, CA: Wadsworth.
- Gibbon, B., Watkıns, C., Barer, D., Waters, K., Davies, S., Lıghtbody L., and Leathley, M. (2002), 'Can Staff Attitudes to Team Working in Stroke Care Be Improved?,' Journal of Advanced Nursing, 40, 105–111.
- Giordan J. C. (1995), 'That Vision Thing,' Research-Technology Management, 38, 8-9.
- Gladstein, D. L. (1984), 'Groups In Context: A Model of Task Group Effectiveness,' Administrative Science Quarterly, 29, 499-517.
- Hackman, J. R. (1992), 'Group Influences on Individuals in Organizations,' in Handbook of Industrial and Organizational Psychology, eds. M. D. Dunnette and L. M. Hough: Consulting Psychologists Press, pp. 199–267
- Hair, J. F., Ringle, C. M., and Sarstedt, M. (2011), 'PLS-SEM: Indeed a Silver Bullet,' Journal of Marketing Theory and Practice, 19, 139–151.
- Hamel, G., and Prahalad, C.K. (1989), 'Strategic Intent,' Harvard Business Review (May-June), 63-76.
- Hansen, P. G. (1994), 'Getting Your Team on the Same Side,' Financial Executive Magazine, 10, 43-49.
- Hanson, P.G., and Lubin, B. (1988), 'Team Building as Group Development,' in Team Building: Blue Prints For Productivity and Satisfaction, eds. W.B. Reddy and K. Jamiron, Aexandria, VA.: National Institute for Applied Behavioral Science, pp. 76-78.
- Hartenian, L. S., Hadaway, F. J., and Badovick, G. J. (1994), 'Antecedents and Consequences of Role Perceptions: A Path Analytic Approach,' Journal of Applied Business Research, 10, 40-50.
- Henseler, J., Ringle, C.M., and Sinkovics, R.R. (2009), 'The Use of Partial Least Squares Path Modeling in International Marketing,' Advances in International Marketing, 20, 277–319.
- Hong, P., Doll, W.J., Nahm, A. Y., and Li, X. (2004), 'Knowledge Sharing in Integrated Product Development,' European journal of Innovation Management, 7, 102-112.
- Houston, B. (1972), 'Let's Put More Esprit in the Corporation,' Harvard Business Review, 50, 55-61.
- Hülsheger, U. R., Anderson, N., and Salgado, J. F. (2009), 'Team-Level Predictors of Innovation at Work: A Comprehensive Meta-Analysis Spanning Three Decades Of Research,' Journal of Applied Psychology, 94, 1128–1145.

- Jackson, S. E., and Schuler, R. S. (1985), 'A Meta-Analysis and Conceptual Critique of Research on Role Ambiguity and Role Conflict in Work Settings,' Organizational Behavior and Human Decision Processes, 36, 16–78.
- Jehn, K. A. (1995), 'A Multimethod Examination of the Benefits and Detriments of Intragroup Conflict,' Administrative Science Quarterly, 40, 256–282.
- Jehn, K. A. (1997), 'A Qualitative Analysis of Conflict Types and Dimensions in Organizational Groups,' Administrative Science Quarterly, 42, 530–557.
- Jehn, K. A., and Bendersky, C. (2003), 'Intragroup Conflict in Organizations: A Contingency Perspective on the Conflict-Outcome Relationship,' Research in Organizational Behavior, 25, 187–243.
- Jehn, K. A., and Mannix, E. A. (2001), 'The Dynamic Nature Of Conflict: A Longitudinal Study of Intragroup Conflict and Group Performance,' Academy of Management Journal, 44, 238–251.
- Kahn, R. L., Wolfe, D. M., Quinn, R. P., Snoek, J. D., and Rosenthal, R. A. (1964), Occupational Stress: Studies in Role Conflict and Ambiguity, New York: John Wiley.
- Katzenbach, J., and Smith, D. (1992), The Wisdom of Teams, Boston, MA: Harvard Business Scholl Press.
- Kessler, E.H., and Chakrabarti, A.K. (1996), 'Innovation Speed: A Conceptual Model of Context, Antecedents, and Outcomes,' Academy of Management Review, 21, 1143-1191.
- Khurana, A., and Rosenthal, S.R. (1998), 'Toward Holistic 'Front-End' in New Product Development Projects,' Journal of Product Innovation Management, 5, 3, 180-190.
- Kiesler, S. (1978), Interpersonal Processes in Groups and Organizations, AHM Publishing Corporation.
- Kirkman, B.L., and Rosen, B. (1999), 'Beyond Self-Management: Antecedents and Consequences of Team Empowerment,' Academy of Management Journal, 42, 58–74.
- Kleijnen, M., Ruyter, K., and Wetzels, M. (2007), 'An Assessment of Value Creation in Mobile Service Delivery and The Moderating Role of Time Consciousness,' Journal of Retailing, 83, 33–46.
- Klein, C., DiazGranados, D., Salas, E., Le, H., Burke, C. S., Lyons, R., and Goodwin, G. F. (2009), 'Does Team Building Work?,' Small Group Research, 40, 181–222.
- Koufteros, Xenophon A., Vonderembse, Mark A., and Doll, William J. (2002), 'Integrated Product Development Practices and Competitive Capabilities: The Effects Of Uncertainty, Equivocality, and Platform Strategy,' Journal of Operations Management, 20, 331–355.

- Langfred, C. W. (2007), 'The Downside of Self-Management: A Longitudinal Study of The Effects of Conflict on Trust, Autonomy, and Task Interdependence in Self-Managing Teams,' Academy of Management Journal, 50, 885–900.
- Larson, C., and LaFasto, F. M. (1989), Teamwork: What Must Go Right/What Can Go Wrong, Newbury Park, CA: Sage.
- Launonen, M., and Kess, P. (2002), 'Team Roles in Business Process Re-Engineering,' International Journal of Production Economics, 77, 205-218.
- Lewis, J. (2001), Project Planning Scheduling & Control, New York: McGraw-Hill.
- Locke, E. A., Shaw, K. M., Saari, L.M., and Latham, G. P. (1981), 'Goal Setting and Task Performance: 1969-1980,' Psychological Bulletin, 90, 125-152.
- Lucas, J.R. (1998), 'Anatomy of a Vision Statement,' Management Review, 87, 22-26.
- Lynn, G. S., Abel, K., Valentine, W.S., and Wright, R. (1999), 'Key Factors in Increasing Speed to Market and Improving New Product Success Rates,' Industrial Marketing Management, 28, 319-326.
- Lynn, G. S., and Akgün, A. E. (2001), 'Project Visioning: Is Components and Impact on New Product Success,' The Journal of Product Innovation Management, 18, 374-387.
- Lynn, G.S. (1998), 'New Product Team Learning: Developing and Profiting From Your Knowledge Capital,' California Management Review, 40,74-93.
- MacKenzie, S.B., Podsakoff, P.M., and Jarvis, C.B. (2005), 'The Problem of Measurement Model Misspecification in Behavioral and Organizational Research and Some Recommended Solutions,' Journal of Applied Psychology, 90, 710–730.
- MacMillan, P. (2001), The Performance Factor: Unlocking the Secrets of Teamwork, Nashville, TN: Broadman & Holman Publishers.
- Mannix, E., and Neale, M. A. (2005), 'What Differences Make a Difference? The Promise and Reality of Diverse Teams in Organizations,' Psychological Science in the Public Interest, 6, 31–55.
- McAlister, J.M. (1998), 'Vision precedes success,' Military Review,' 78, 24-29.
- Meyer, C., and Purser, R. E. (1993), 'Six Steps to Becoming aFast-Cycle-Time Competitor,' Research-Technology Management, September-October, 41-48.
- Millson M. R, Raj, S. P., and Wilemon, D. (1992), 'A Survey of Major Approach for Accelerating New Product Development,' Journal of Product Innovation Management, 9, 53-69.
- Moorman, C. (1995), 'Organizational Market Information Processes: Cultural Antecedents and New product Outcomes,' Journal of Marketing Research, 32, 318-335.

- Moynihan, D, P., and Pandey, S, K. (2007), 'Finding Workable Levers Over Work Motivation: Comparing Job Satisfaction, Job Involvement, and Organizational Commitment,' Administration and Society, 39, 803-832,
- Newman, G. A., and Wright, J. (1999), 'Team Effectiveness: Beyond Skills and Cognitive Ability,' Journal of Applied Psychology, 84, 376-389.
- Niemes, J. (1996), 'Team Member Must Have Vision, Trust, Confidence,' Orlando Business Journal, 12, 15.
- Nijssen E., Arbouw, A. R. L., and Commandeur, H. R. (1995), 'Accelerating New Product Development: A Preliminary Empirical Test of A Hierarchy of Implementation,' Journal of Product Innovation Management, 12, 99-109.
- Nunnally, J.C. (1978), Psychometric Theory, New York: McGraw-Hill.
- O'Neill, T.A., Allen, N.J., and Hastings, S.E. (2013), 'Examining the "Pros" and "Cons" of Team Conflict: A Team-Level Meta-Analysis of Task, Relationship, and Process Conflict,' Human Performance, 26, 236–260.
- O'Leary-Kelly, A. M., Martocchio, J.J., and Frink, D.D. (1994), 'A Review of the Influence of Group Goals on Group Performance,' Academy of Management Journal, 37, 1285-1301.
- Patanakul, P., Chen, J., and Lynn, G. S. (2012), 'Autonomous Teams and New Product Development,' Product Development & Management Association, 29, 734–750.
- Pearsall, M. J., Ellis, A. P. J., and Stein, J. (2009), 'Coping With Challenge and Hindrance Stressors in Teams: Behavioral, Cognitive, and Affective Outcomes,' Organizational Behavior and Human Decision Processes, 109, 18-28.
- Pieterse, A.N., Knıppenberg, D.V., and Dierendonck, D.V. (2013), 'Cultural Diversity and Team Performance: The Role of Team Member Goal Orientation,' Academy of Management Journal, 56, 782–804.
- Puck, J., and Pregernig, U. (2014). The Effect of Task Conflict and Cooperation on Performance of Teams: Are the Results Similar for Different Task Types?. European Management Journal. doi: 10.1016/j.emj.2014.03.007.
- Ray, D., and Bronstein, H. (1995), Teaming Up: Making the Transition to a Self-Directed, Team-Based Organization. New York: McGraw Hill.
- Reid, S. E. and Brentani, U. (2010), 'Market Vision and Market Visioning Competence: Impact on Early Performance for Radically New, High-Tech Products,' J Prod Innov Manag, 27, 500–518.
- Revilla, E., and Cury, T. (2009), 'Antecedents and Consequences of Team Vision in Product Development: An Empirical Evidence,' IE Business School Working Paper, WP09-01.
- Revilla, E., and Rodriguez, B. (2011), 'Team Vision in Product Development: How Knowledge Strategy Matters,' Technovation, 31, 118-127.

- Rice, M.P., O'Conner, G.C., Peters, L.S., and Morone, J.G. (1998), 'Managing Discontinuous Innovation,' Research Technology Management, 41, 52-58.
- Richardson, J. (2010), An Investigation of the Prevalence and Measurement of Teams in Organizations: The Development And Validation of The Real Team Scale, Unpublished Doctoral Dissertation, Aston University, UK.
- Rico, R., Sanchez-Manzanares, M., Gil, F., and Gibson, C. (2008), 'Team Implicit Coordination Processes: A Team Knowledge- Based Approach,' The Academy of Management Review, 33, 163-184.
- Ringle, C.M., Wende, S., and Will, A. (2005), SmartPLS 2.0 (beta), Hamburg, Germany, http://www.smartpls.de.
- Rizzo, J. R., House, R. J., and Lirtzman, S. I. (1970), 'Role Conflict and Ambiguity in Complex Organizations,' Administrative Science Quarterly, 15, 150-163.
- Rogers, M. (2009), What Can We Learn About Teamwork and Ants?, Teamwork and Leadership Bloggings With Michael Rogers, http://www.teamworkandleadership.com/2009/10/what-can-we-learn-about-teamwork-and-ants-video-included.html#sthash.au3osvsF.dpbs.
- Rose J., Ahuja, A.K., and Jones, C. (2006), 'Attitudes of Direct Care Staff Towards External Professionals, Team Climate and Psychological Wellbeing: A Pilot Study,' Journal of Intellectual Disabilities, 10, 105–120.
- Roth, G., and Kleiner, A. (1998), 'Developing Organizational Memory Through Learning Histories,' Organizational Dynamics, 27, 43-60.
- Rouse, W.B, Cannon-Bowers, J.A., and Salas, E. (1992), 'The Role of Mental Models in Team Performance in Complex Systems,' IEEE Transactions On Systems, Man, And Cybernetics, 22, 1296-1308.
- Ruiz-Ulloa, B. C , and Adams, S. G. (2004), 'Attitude Toward Teamwork and Effective Teaming,' Team Performance Management, 10, 145-151.
- Savelsbergh, C., Gevers, J. M. P., van der Heijden, B. I. J. M., and Poell, R.F. (2012), 'Team Role Stress: Relationships With Team Learning and Performance in Project Teams,' Group & Organization Management, XX, 1–34.
- Schippers, M.C., Homan, A.C., and Knippenberg, D.V. (2012), 'To Reflect Or Not to Reflect: Prior Team Performance as a Boundary Condition of the Effects of Reflexivity on Learning and Final Team Performance,' Journal of Organizational Behavior, 34, 6–23.
- Shalley, C., and Gilson, L.L. (2004), 'What Leaders Need to Know: A Review of Social and Contextual Factors That Can Foster or Hinder Creativity,' The leadership Quarterly, 15, 33-53.
- Shoemaker, M. E. (2003), 'Leadership Behaviors in Sales Managers: A Level Analysis,' Journal of Marketing Theory & Practice, 11, 17-29.

- Sosik, J.J., Kahai, S.S., and Piovoso, M.J. (2009), 'Silver Bullet or Voodoo Statistics? A Primer for Using the Partial Least Squares Data Analytic Technique in Group and Organization Research,' Group & Organization Management, 34, 5–36.
- Stewart, G. L., Fulmer, I. S., Barrick, M, R., and Hollenbeck, J, (2005), 'An Exploration of Member Roles as a Multilevel Linking Mechanism for Individual Traits and Team Outcomes,' Personnel Psychology, 58, 343-365.
- Teas, R. K. (1980), 'An Empirical Test of Linkages Proposed in the Walker. Churchill, and Ford Model of Salesforce Motivation and Performance,' Journal of the Academy of Marketing Science, 8, 58-72.
- Teas, R. K., Wacker, J. G., and Hughes, R. E. (1979), 'A Path Analysis of Causes and Consequences of Salespeople's Perceptions of Role Clarity,' Journal of Marketing Research, 16, 355–369.
- Vaughan, J.A. (1997), 'Vision And Meaning,' Executive Excellence, 14, 11-12.
- Yukelson, D. (1997), 'Principles of Effective Team Building Interventions in Sport: A Direct Services Approach at Penn State University,' Journal of Applied Sport Psychology, 9, 73-96.
- Zhang, Q., and Doll, W.J. (2001), 'The Fuzzy Front End and Success of New Product Development: A Causal Model,' European Journal of Innovation Management, 4, 95-112.
- Zhang, Z., Waldman, D.A., and Wang, Z. (2012), 'A Multilevel Investigation of Leader–Member Exchange, Informal Leader Emergence, and Individual and Team Performance,' Personnel Psychology, 65, 49-78.

APPENDIX: Measures

Constructs	Items	Factor loading	Standardized indicator loading	t values
Vision Clarity	VC1) Before we began playing SABRE for real (after the practice rounds) a few statements were established that helped guide our efforts (e.g., target price, target market, etc.)	0.734	0.739	11.528
	VC2) Prior to beginning the real rounds (after the practice rounds), the team had a clear vision of the required product features.	0.910	0.895	26.994
	VC3) Prior to beginning the real rounds, the team had a clear vision of the target market.	0.829	0.805	12.848
	VC4) Prior to beginning the real rounds, the team had a clear understanding of target customers' needs and wants.	0.883	0.8872	21.985
	VC5) Our technical goals of the product were clear.	0.775	0.779	13.484
	VC6) Our sales volume goals were clear.	0.795	0.817	17.027
	VC7) Our overall business goals were clear.	0.877	0.891	31.353
	Percent of variance explained = 69.066 Crombach's alpha = 0.923 CR=0.9392 AVE=0.6891			
Vision support	VS) Overall, team members supported the vision of our company.	Single item construct		
Role clarity	RC1) The expectations for team member behavior were clear to everyone.	0.897	0.899	7.988
	RC2) The roles of team members on this project were very clear.	0.960	0.957	9.655
	RC3) The responsibilities of team members on this project were very clear.	0.949	0.949	9.033
	Percent of variance explained = 87.491 Crombach's alpha = 0.925 CR=0.9544 AVE=0.8748			

EXTERNAL DEBT AND ECONOMIC GROWTH: NEW EVIDENCE FOR AN OLD DEBATE

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Keywords	ABSTRACT
External debt, Economic growth, Developing economies, Panel data analysis, Common Correlated Effects Estimator	This study aims to contribute to the understanding of the impact of external debt on economic growth by using the data for moderately indebted middle-income countries over the period of 1985-2013. The paper employs a relatively recent panel analysis technique, the common correlated effects (CCE) framework, which considers cross-sectional dependence and heterogeneity implications in the data. Our overall findings suggest a negative linear effect of external debt for the panel despite some exceptions in the country-specific results. In the panel results, the impact of external indebtedness occurs through the debt stock rather than a direct impact of liquidity constraint represented by a debt service variable.
JEL Classification F34,F43,F63,C23	

1.INTRODUCTION

During the 1950s and 1960s foreign resources were considered as significant for development and economic growth of less developed economies (e.g. Avromovic *et al.*, 1964; Chenery and Strout, 1966)[1]. It was argued that countries at early stages of development did not have sufficient resources that could be devoted to investment, which in turn, was crucial for economic development. External debt was seen as an important source of economic growth for developing economies through its impact on capital accumulation, human resource development and infrastructure improvement.

As foreign aid and/or foreign debt were seen almost inevitable, many developing countries exerted external resources at an increasing rate. Most of these countries borrowed to compensate insufficiency of domestic savings and to meet foreign currency need for imports of intermediate and capital goods. As a result, their indebtedness intensified and reached critical levels, eventually resulting in foreign debt crises in a number of economies at the end of the 1970s or in the early 1980s. In the meanwhile, the share of private loans compared to official financing in total foreign indebtedness started

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[1] Although the Harrod-Domar model was not developed to offer solutions to the issues in the less developed economies, it was used by the economists who debated for the significance of external resources for those.

rising. With the liberalisation of international capital movements the nature of external borrowing/lending changed extensively from the late 1970s.

Debt crises of the developing countries led to serious concerns and debate. Following the crises, implications of foreign debt for developing economies were questioned in the academic and policy making circles. After the tough post-crisis experience, the conditions improved in most of the middle-income debtor countries. Then in the 1990s, high external indebtedness of a rather poor group of countries revived the debate. A number of low-income countries received debt relief under the Heavily Indebted Poor Countries (HIPCs) and Enhanced HIPCs Initiatives with the objectives of long-term debt sustainability and poverty reduction.[2] In return, those countries agreed to pursue the IMF- and World Bank-designed adjustment programmes and meet specific policy and performance criteria. It was argued that, in order to achieve debt sustainability and poverty reduction objectives, economic growth was inevitable while high levels of debt and debt service obligations impeded economic growth.

Foreign debt related issues have never been resolved for developing economies. The impact of high level of external indebtedness on economic performance has sustained as an issue of recurrent importance despite its changing nature. In the related literature, the adverse effects of external debt on economic performance have mostly been investigated through the 'disincentive effects' of high debts due to 'debt overhang' and macroeconomic uncertainty, as well as through the 'liquidity constraint effect', referring the impact of debt service. Empirical studies have been undertaken by using time series data for individual countries as well as employing cross-section or panel data analyses for different groups of developing economies. Despite the differences in model specifications and empirical methodologies, most of the empirical work seems to provide evidence for negative impact of high levels of external debt on economic growth, but without a general agreement on the channel(s) of impact.

Most of the empirical work since the 1990s has been undertaken in order to investigate the implications of heavy indebtedness of the HIPCs. The debt problems of the HIPCs differ in many aspects from those of the middle-income countries that received most of the attention during the debt crisis of the 1980s. The HIPCs are characterised also by poor economic performance beside heavy indebtedness. For most of the HIPCs an important part of debt was contracted on concessional terms, and most of their creditors are official as opposed to private commercial creditors. Therefore, different aspects of the middle-income countries and HIPCs should be taken into account in the analyses.

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[2] It was argued that high indebtedness was one of the main factors contributing to the limited development of the poor countries. One of the main motivations for the debt-relief initiatives stemmed from the believed damaging effect of a heavy debt burden on per capita income growth. The HIPC initiatives, and implications of and problems with the debt relief process do not consist one of the central issues of this study. There is a vast literature on the debate; for an overview see e.g. Claessens *et al*. (1996); Chowdhury, 2001; Easterly (2002); IMF (2002); Clements *et al*. (2003); Bhattacharya and Clements, 2004; Arnone *et al*. (2005).

This study aims to contribute to the understanding of the impact of external debt on economic growth in developing economies. To this end, the paper employs a relatively new panel data methodology advanced by Pesaran (2006), namely the common correlated effects (CCE) framework, by using the data for a group of moderately indebted middle-income countries over the period of 1985-2013. One of the critical issues in panel data analysis concerns the cross-sectional dependence, and the CCE methodology is preferred in the study as it considers any possibility of cross-sectional dependence as well as heterogeneity related issues in the data. To the best of our knowledge, the CCE estimation has not been used in the related empirical work with the exception of Eratas and Basci Nur (2013). Despite the finding of a negative impact of external debt on economic growth, the study has limitations owing to the model specification which is based on the external debt stock as the sole explanatory variable for economic growth.

In this study, to investigate the impact of external debt on growth, different specifications of an economic growth model are employed with alternative debt indicators along with some relevant control variables. The overall findings of the study suggest a negative linear impact of external debt on economic growth across the countries of interest with some exceptions in the country-specific results.

The rest of the paper is organised as follows. The next section briefly reviews the literature on the impact of external debt on economic growth. Section 3 presents the data set and model specifications, whereas Section 4 is devoted to the empirical analysis with the discussion of methodological issues and the findings of the study. Finally, Section 5 draws some conclusions.

2.LITERATURE REVIEW

2.1 Debate on the Impact of External Debt on Economic Growth

While the early work on the debt-growth relationship focused on the positive aspects of and need for external borrowing like in the *growth-cum-debt* view, critical studies considering negative implications of external debt for developing economies emerged from the 1970s onwards.[3] According to one of those arguments, most of the external resources are not used for economic development and growth of those countries, hence creating additional burden. Moreover, even they are, positive impacts can be ruined due to various factors, such as issues stemming from debt servicing processes and uncertainty led by high levels of external debt. Considerable amount of newly borrowed resources are also used in debt servicing. Besides, external debt may enhance economic growth only to a certain point. Once debt piles up and reaches high levels, it becomes a major destabilising factor and a serious holdup to long-term economic growth.

It has been argued that external debt can potentially help promote higher economic growth when it is used to finance investments. Owing to the alleged channel from investment towards economic growth, the debate -and empirical work- on the impact of

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[3] The paper by Griffin and Enos (1970) is one of the leading studies that argue for the negative impact of external debt on economic growth empirically as well as theoretically.

foreign debt on economic growth has mostly been undertaken through its impact on domestic investment directly or indirectly. However, the impact of external debt on economic growth may occur through some other channels different than the level of investment. In the literature, the channels through which a heavy debt burden can affect economic growth have been discussed mostly under the debt overhang, liquidity constraint, and uncertainty effects, among others.

The literature on the impact of external debt on economic growth has largely relied on the debt overhang view. Despite its common use, the debt overhang hypothesis was not originally developed to analyse the effects of external debt on economic growth.[4] It was adapted for middle income countries that experienced debt crises in the 1980s. The argument became a key concept in the debate on the debt relief programmes for highly indebted poor countries in the 1990s and 2000s.[5]

The 'debt overhang' is defined by Krugman (1988) as "the presence of an existing, 'inherited' debt sufficiently large that creditors do not expect with confidence to be fully repaid" (p.254). In other words, "a country has a debt overhang problem when the expected present value of potential future resource transfers is less than its debt" (p. 255). According to the debt overhang hypothesis, once a country's total debt stock is believed to exceed its repayment ability with some probability in the future, expected debt service will probably be an increasing function of its output level (Claessens *et al*., 1996). Consequently, the expected rate of returns from productive investments in such an economy will be anticipated low since a significant portion of any subsequent economic progress will be 'taxed away' by foreign creditors. Hence, investment by domestic and foreign investors will be discouraged, adversely affecting economic growth (Krugman, 1988; Sachs, 1989).

The debt overhang argument is extended by a 'debt Laffer curve'. According to this representation, external borrowing plays a critical role in enhancing economic growth up to a certain level. If the debt stock continues to increase, the impact becomes negative,

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[4] The term 'debt overhang' was originally developed in the corporate finance literature to indicate a situation in which a firm's debt is so large that any earnings generated by new investment projects are entirely appropriated by existing debt holders, and hence, even projects with a positive net present value cannot reduce the firm's stock of debt or increase the value of the firm (Myers, 1977). The concept was adapted by the international finance literature with a series of influential papers following the foreign debt crises in developing countries in the mid-1980s; see e.g. Krugman (1988) and Sachs (1989).

[5] The debt overhang theory argues that when a country's debt burden is as large as that it could possibly pay even with maximum adjustment effort, there is no reason for the country to make an effort since the reward goes only to the creditors. On the other hand, the presence of a debt overhang may give creditors an incentive to lend at an expected loss to protect their existing claims (Krugman, 1988). Hence, it makes sense for the creditors to demand less than this maximum, in order to provide the country with some incentive to adjust (Krugman, 1988, 259). Once a debt reduction in the face value of future debt obligations is provided, distortions due to implicit tax will be reduced, and this will increase investments.

giving rise to an inverse U-shaped curve.[6] Debt overhang starts after the maximum point, implying a disincentive to invest because potential investors perceive that most of the gains will be taxed away to pay the lender. Hence, any levels to the right of the threshold translate into sluggish economic growth. According to this narrow interpretation of the debt overhang linked to the tax disincentives argument, the alleged implicit tax will have a distortionary effect on investment choices, and hence, reduce economic growth.

In its first formulation, the debt overhang view focused on the adverse impact of high external debt on physical capital investment. The argument has been developed in a broader sense to consider negative implications of debt for investment in human capital and in technology acquisition, and for the government's willingness for implementation of macroeconomic reforms (Claessens *et al.*, 1996; Clements *et al.*, 2003).

The debt overhang argument implies a relationship between a reduction in current debt stock, i.e. future debt service payments, and an increase in current investment. But it is also possible that a reduction in current debt service payments may result in an increase in current investment for any level of future indebtedness (Cohen, 1993). If there is no debt overhang, an increase in investment level could be achieved by a new loan or a reduction in debt service, debt reduction is not necessary for an increase in current investment. Therefore, two effects of debt should be distinguished, i.e. the implications of debt service for economic growth should also be considered for any given level of external debt.

It is argued that external debt service payments can potentially influence economic growth by creating a 'liquidity constraint', which is also captured as a 'crowding out' effect, since limited resources should be distributed among alternative uses, such as consumption and investment, and transfers to pay outstanding debt (Cohen, 1993; Claessens *et al.*, 1996; Fosu, 1996; Pattillo *et al.*, 2002, 2004; Clements *et al.*, 2003; Arnone *et al.*, 2005). According to this view, high debt service payments can directly crowd out investment by preventing a country from devoting resources to productive investment areas. Other things being equal, high public debt service can raise the government's interest bill and the budget deficit, reducing public savings. This, in turn, may crowd out private investment by leading to tax increases and/or by raising interest rates, and hence reducing available funds for private investments. Moreover, a reduction in public investments can also have an indirect effect by leading to a decrease in complementary private investments.

The impact of high debt service payment can also occur as it squeezes the amount of resources available for infrastructure and human capital formation, with further negative effect on growth and development. High debt service can impede imports of intermediate

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[6] The debt Laffer curve was first introduced by Sachs (1989). In the original specification, the curve illustrates the expected debt repayment as a function of the face value of the debt. On the upward-sloping, 'right' side of the curve, an increase in the face value of debt service leads to an increase in repayment, whereas on the 'wrong' side, an increase in the face value of debt service reduces debt repayment. In the later versions the debt Laffer curve is used, for example, to represent the contribution of debt to economic growth.

and technological goods, which are critical for production, hence hampering economic growth. This impact can occur through price rationing (devaluation of the domestic currency) or non-price rationing (import restriction) (Serieux and Samy, 2001).

Fosu (1996) underlines the deterioration in investment decisions due to the liquidity constraint effect stemming from debt service payments. The author argues that a country facing large debt service payments is likely to have a relatively low productive investment mix. Foreign exchange liquidity constraints can decrease the availability of investment funds and necessitate increased reliance on relatively short-term projects in order to service the debt rather than long-term investments. Furthermore, high debt service may result in substitution away from productive investments requiring expensive imported materials critical to economic growth. Hence, as a result of the adverse effects on investment mix, debt service payments could decrease output growth 'directly' by diminishing productivity even if debt service payments do not reduce saving and investment levels substantially. The author refers to this effect as the 'direct effect of debt hypothesis' and suggests that both debt stock and debt service may be burdensome and deleterious to economic growth due to investment choices even the level of investment is not affected.

One other channel through which external debt may lead to sluggish growth concerns the uncertainty about future resource inflows and debt service payments, with their implications for macroeconomic stability (Serven, 1997; Pattillo *et al*., 2002; Arnone *et al*., 2005). Although this argument is similar to the debt overhang hypothesis, the focus here is not on the disincentives stemming from the possibility that the gains will be taxed away by the creditors, but on the general uncertainty that dominates the economy and distorts investment choices by leading to misallocations and withdrawals.

The level of country risk increases with the level of external indebtedness, leading to limited and expensive borrowing opportunity with a concern for sustainability. The volatility of future inflows rises with the risk of default, rescheduling and arrears, whereas the access to capital markets depends on the perceived sustainability (Arnone *et al*., 2005). In these circumstances, the government policies and reforms also depend on conditional lending and rescheduling. Furthermore, high external debt can reduce a government's incentive to carry out important structural and fiscal reforms if it anticipates that foreign creditors will reap most of the benefits. Increasing uncertainty about the government's actions and policies to meet its debt service obligations can also lead to capital flight if the private sector fears a forthcoming devaluation and/or increases in taxes to service the outstanding debt (Oks and Wijnbergen, 1994).

In this uncertain environment domestic and foreign investors are likely to exercise the 'waiting' option due to the sustainability concerns, even if the debtor country's fundamentals are improving (Serven, 1997). Moreover, investment decisions under uncertainty are not likely to have forward-looking character; short-term, low-risk investments and trading activities with quick returns are preferred to the long-run, high-risk and structural investments. This misallocation of resources results in a decline in the overall efficiency and productivity of capital, leading to a slowdown of economic growth (Serven, 1997).

2.2 Empirical Studies

There is a large number of empirical studies that have investigated determinants of economic growth and/or investment in developing countries, and in some of those debt indicators have been used along with various explanatory variables. To a large extent the implications of external debt for economic growth has been examined through its impact on investment. The empirical work, which consists of individual time series as well as cross-sectional and panel data analyses, has generally provided evidence to support a negative or insignificant effect of external debt on economic growth/investment, especially when it reaches high levels.

To isolate the channels of adverse impact of external debt on growth different debt indicators have been used in the related literature. While some studies do not intend to distinguish among the alternative channels of impact, generally a debt stock variable has been used to identify the debt overhang effect, whereas a variable representing debt service payments has been included to control for a possible liquidity constraint / crowding out effect. As discussed above, use of foreign debt in non-productive short-term investments and inefficient resource allocation may be the causes of the negative impact of foreign debt on economic growth.

Most of the empirical studies have focused on the debt overhang hypothesis and a number of them have exploited the notion of debt Laffer curve more specifically. In those studies nonlinear model specifications are employed to investigate a possible inverse U-shaped curve and a specific threshold level (e.g. Claessens, 1990; Desphande, 1997; Elbadawi *et al.*, 1997; Pattillo *et al.*, 2002, 2004; Clements *et al.*, 2003; Schclarek, 2004; Cordella *et al.*, 2005)[7]. The authors argue that external debt feeds economic growth upto the threshold level, which changes across the studies, and after that point, the marginal effect becomes negative. It is assumed that when the impact of external debt on growth appears to be negative, the country is on the 'wrong' side of the hypothetical debt Laffer curve.

In one of the early studies, Claessens (1990) finds that five out of 29 countries are on the 'wrong' side of the curve, suggesting that partial debt reduction could increase the expected repayments, whereas in Claessens *et al*. (1996) the number of countries that were on the 'wrong' side of the curve changed from 6 to 15 out of 35, depending on the model specifications.

Fosu (1996) investigates a direct relationship between external debt and economic growth rather than through investment channel. The author argues that debt may negatively affect economic growth even if it has little impact on investment. In his study on 35 sub-Saharan African countries, he finds a negative impact of debt via a reduction in the marginal productivity of capital. The results also suggest a non-monotonic impact of debt

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[7] It should be underlined that the empirical studies on the debt overhang argument suggest different levels of thresholds at which the impact of external debt on growth becomes negative. This stems from the choice of sample countries as well as from model specifications and methodologies employed.

in the long term; it is positive at low levels of investment and becomes negative after the threshold.

Elbadawi *et al*. (1997) consider nonlinear effects of debt on growth by including the debt-to-GDP ratio both in linear and quadratic forms and find evidence for the debt overhang hypothesis for 99 developing countries. Their analysis suggests an inverse U-shaped curve. Pattillo *et al*. (2002) also find a nonlinear relationship between debt and growth using panel data for 93 developing countries. Pattillo *et al*. (2004) use a panel of 61 developing countries and confirm their previous findings about the debt overhang hypothesis. They also show that the nonlinear relationship between debt and economic growth works through the channels of physical capital and factor productivity, while relevance of human capital seems to be negligible. In a growth model using panel data for 55 low-income countries Clements *et al*. (2003) investigate the relationship between external debt and growth and also find evidence supporting the debt overhang case.

Cordella *et al*. (2005) also provide evidence of nonlinearity in the debt-growth relationship. However, the authors argue that beyond the threshold level, the impact of debt on economic growth becomes nil, creating a 'debt irrelevance' zone. According to the study, the debt overhang hypothesis is valid only for the non-HIPCs as the HIPCs are on the debt irrelevance side of the debt-Laffer curve.

To investigate the implications of external debt through alternative channels, a debt service variable is included in the models. Despite some evidence in favour of the crowding out/ liquidity constraint effect, the empirical studies are not conclusive. Some studies suggest that both external debt burden and debt service payments reduce investment and economic growth (e.g. Elbadawi *et al*., 1997; Chowdhury, 2001). For instance, in Pattillo *et al*. (2002, 2004) the debt service variable does not appear to be significant, and the authors underline the relevance of the negative effect of the debt stock. On the other hand, the empirical results obtained by Cohen (1993) for 81 developing countries confirm the crowding out effect, contrary to the debt overhang hypothesis. The findings suggest a significantly negative relationship between debt service and investment, whereas the link between debt stock and investment does not appear to be significant. Similarly, for a large sample of developing countries, Savvides (1992) provides some evidence confirming the crowding out effect of debt service, whereas the debt-to-GNP ratio has a negative but insignificant coefficient, indicating no debt overhang effect. Greene and Villanueva (1991) argue that external debt service negatively affects private investment, while Serieux and Samy (2001) find a similar link between debt service and total investment. Clements *et al*. (2003) show that debt service has no direct effect on growth, but find some evidence supporting the crowding out effect of debt service on public investment, though very weak.

Chowdhury (2001) employs panel data analysis for two groups of countries, namely the HIPCs and non-HIPCs. The author uses alternative debt indicators in a linear setting, and irrespective of the debt variable, provides some evidence to support a negative causality running from debt to economic growth in both groups. Presbitero (2005) also finds a negative linear relationship between external debt and growth, suggesting the lack of a debt-Laffer curve, contrary to the empirical studies mentioned above. On the other hand, the debt service variable has an adverse impact on the rate of economic growth only in

low income countries. The author argues that the main channel for the impact of external debt on economic growth seems to be a reduction in the quality and efficiency of investment rather than its level.

Pattillo *et al*. (2002) argue that although the theoretical literature suggests nonlinear effects of external debt on growth through the investment channel, the effects may operate through productivity. The authors claim that the main channel through which debt has an impact on economic growth is the quality and efficiency of investment rather than its level as the exclusion of the investment variable from the growth equation does not change the adverse effect of debt significantly.

3.DATA AND MODEL SPECIFICATION

3.1 Data

The empirical analysis in this study is based on the data for 13 middle-income countries over the period of 1985-2013. The data are provided from the World Development Indicators database of the World Bank.

The variables used in the model specifications are the real GDP growth rate (*gdpgr*), real GDP per capita growth rate (*gdppcgr*), external debt stock-to-GDP ratio (*stock*), external debt service-to-exports ratio (*service*), investment ratio as a share of GDP (*inv*), inflation rate (CPI) (*inf*), and trade openness (*open*).

The average values of growth rates and relevant debt indicators for the countries of interest are given in Table 1. The GDP per capita values are measured in real US$, whereas growth rates represent annual changes in real GDP and in real GDP per capita.

Table 1. Growth and Debt Variables of the Sample Countries

Country	GDP per capita (US$)	GDP growth (%)	GDP per cap growth (%)	Debt stock/ GDP (%)	Debt Service/ Exports (%)
Argentina	5046	3.12	1.96	49.68	36.17
Brazil	4596	2.99	1.55	29.04	43.34
Bulgaria	3329	1.65	2.38	79.73	16.35
Colombia	3249	3.83	2.07	32.26	34.85
India	629	6.38	4.59	21.78	22.37
Indonesia	1152	5.32	3.69	57.90	27.49
Malaysia	4676	5.78	3.40	49.58	8.95
Mexico	7322	2.58	0.93	33.49	25.04
Pakistan	617	4.45	2.00	41.89	25.40
Peru	2621	3.74	2.10	55.92	22.51
Phillipines	1121	3.82	1.62	59.95	21.22
Thailand	2265	5.37	4.39	44.48	14.82
Turkey	6171	4.31	2.73	42.32	34.96

Source: World Development Indicators

3.2. Model Specification

Following the earlier studies, an economic growth model is augmented by using external debt indicators along with relevant explanatory variables to evaluate the impact of external debt on economic growth. The growth of GDP and growth of GDP per capita are used interchangeably as the dependent variable of the models.

A country should arrange enough resources to serve its debt obligations and to improve its economic performance. Hence, implications of debt service may differ from those of debt stock, which indicates an overall burden on the economy. In order to distinguish possible channels through which external debt can affect economic growth, two debt indicators, namely the external debt-to-GDP ratio and the debt service-to-exports ratio, are used in the model specifications.[8] A number of control variables, such as the investment ratio, inflation rate, and trade openness, are included in the growth equation in order to avoid specification bias, whereas some other possibly relevant variables, such as secondary school enrolment rate and fiscal balance could not be included in the analysis due to data limitations.

Investment constitutes a significant determinant for the overall growth performance of an economy. Therefore, the ratio of fixed capital formation to GDP is incorporated in the model specifications, with an expected positive sign.

Policy related variables such as trade openness and inflation rate are included to control for macroeconomic conditions. Openness is measured by total international trade, i.e. the sum of exports and imports, as a percentage of GDP. This indicator reflects to what extent economic activities of a country are linked to the world. Although the role of openness on economic growth is controversial due to possible damaging effects through imports/trade deficits, it is generally expected that an economy with more international trade links may benefit from transfers of new ideas and technologies from the rest of the world to increase productivity and economic performance.

It is believed that prices play a significant role in an economy by giving signals to economic agents. On the other hand, high and rising prices can distort this signaling role and create uncertainty, which reduces incentives for investment, and hence, growth. Therefore, high level of inflation is expected to have a negative impact on economic growth by adversely affecting decision-making processes of economic agents.

As noted earlier, there are theoretical arguments suggesting that a linear specification of the debt-growth relationship might be inadequate. The relationship may have an inverse U-shaped form, i.e. the impact of debt could be positive at low levels of external debt, but could become negative at high levels of indebtedness as debt overhang might be growth-impeding. Therefore, to consider possible nonlinearity in the debt-economic growth relationship, square of the debt ratio is also incorporated in the model.

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[8] The debt service-to-exports variable has the advantage of being more informative regarding the capacity of a country to generate enough foreign currency to meet its debt obligations. On the other hand, it may be subject to the volatility of exports in those economies. The models in the study are also run by using the debt service-to-GDP ratio, the results do not change significantly.

The basic models estimated in the study can be given by the following linear and quadratic forms:

$$y_{it} = \propto_{it} + \beta X_{it} + \gamma D_{it} + \sigma DS_{it} + \varepsilon_{it}$$

$$y_{it} = \propto_{it} + \beta X_{it} + \gamma D_{it} + \delta D_{it}^2 + \sigma DS_{it} + \varepsilon_{it}$$

where y_{it} represents the alternative definitions of the economic growth rate, whereas D_{it} is used for the external debt stock-to-GDP ratio and DS_{it} for the external debt service-to-exports ratio. X_{it} represents the control variables discussed above.

Throughout the analysis, Model I comprises only the debt stock-to GDP ratio along with the control variables, whereas in Model II the debt service-to-exports ratio is included as well. In order to consider any nonlinearity in the data, Model III is run by incorporating the square of debt stock.

4. EMPIRICAL ANALYSIS

4.1. Preliminary Analysis

One of the significant issues in panel data analysis is the possibility of cross-sectional dependence in the data, which implies the existence of common factors across the units. For instance, a shock affecting one country may spillover onto the others, and in a highly integrated world economy this possibility rises. Cross-sectional dependence has implications for the unit root and cointegration tests as well as for the choice of estimation techniques, and hence, should be considered prior to the empirical analysis. One of the empirical procedures to examine the possibility of cross-sectional dependence is the cross-sectional dependency Lagrange multiplier (CDLM) test developed by Breusch and Pagan (1980). The Breusch-Pagan LM test is based on the sum of squared coefficients of correlation among cross-sectional residuals obtained through OLS. The test statistic denoted by CD_{LM} can be calculated as

$$CD_{LM} = T \sum_{i=1}^{N-1} \sum_{j=i+1}^{N} \hat{\rho}_{ij}^2$$

where $\hat{\rho}_{ij}$ represents the sample estimate of the cross sectional correlation among residuals. Under the null hypothesis of 'no cross-sectional dependence', with fixed N and $T \rightarrow \infty$, the CD_{LM} statistic is distributed as χ^2 with N(N-1)/2 degrees of freedom.[9]

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[9] The Breusch-Pagan test is not applicable when N gets large, and to overcome this problem the Lagrange multiplier test developed by Pesaran (2004) can be employed. The LM test in Pesaran (2004) can be given as $CD_{LM} = \sqrt{\frac{1}{N(N-1)}} \sum_{i=1}^{N-1} \sum_{j=i+1}^{N} (T \hat{\rho}_{ij}^2 - 1)$. Under the null of "no cross-sectional dependence" with first $T \rightarrow \infty$ and then $N \rightarrow \infty$, this test statistic has asymptotic standard normal distribution. Since the number of countries in our analysis is not very large, we proceed with the Breusch-Pagan test.

The results from the Breusch-Pagan test for the variables are reported in Table 2 with 'constant' and 'constant and trend' options. The results indicate that the null hypothesis can be rejected, providing evidence for the existence of cross-sectional dependence across the countries of the analysis. These findings imply that a shock affecting one of the countries can be transmitted to the others, and hence, cross-sectional dependence should be taken into account in the estimation process.

Table 2. Cross-Sectional Dependence Tests for Variables

Variable	CD_{LM}	
	Statistic	**p-value**
Constant		
gdpgr	179.595	0.000
gdppcgr	179.080	0.000
service	100.286	0.045
stock	124.922	0.001
stocksq	154.131	0.000
open	121.062	0.001
inf	206.173	0.000
inv	124.062	0.001
Constant and Trend		
gdpgr	183.013	0.000
gdppcgr	182.034	0.000
service	99.499	0.051
stock	136.077	0.000
stocksq	164.815	0.000
open	126.391	0.000
inf	201.148	0.000
inv	127.077	0.000

Having tested for the cross-sectional dependence, time-series properties of the variables should be investigated before proceeding. To this end, two second generation panel unit root tests considering cross-sectional dependence, namely the CIPS test (Pesaran, 2007), and the Z_A^{SPC} and the Z_A^{LA} tests (Hadri and Kurozumi, 2012), are employed.

The CIPS test uses the standard ADF regression with the cross-section averages of the lagged levels and first-differences of the individual series. The test procedure includes estimation of the separate cross-sectionally augmented Dickey-Fuller (CADF) regressions for each country, hence allowing for different autoregressive parameters for each member of the panel. The CADF regression is given by

$$\Delta x_{it} = z_{it}\gamma_i + \rho_i x_{i,t-1} + \sum_{j=1}^{k_i} \varphi_{ij}\Delta x_{it-j} + \alpha_i \bar{x}_{t-1} + \sum_{j=0}^{k_i} \eta_{ij}\Delta \bar{x}_{t-j} + v_{it}$$

where $\bar{x}_t$ is the cross-section mean of x_{it}, i. e. $\bar{x}_t = N^{-1} \sum_{i=1}^{N} x_{it}$. The null hypothesis is that each series contains a unit root, $H_0 = \rho_i = 0$ for all *i*, while the alternative hypothesis is that at least one of the individual series in the panel is (trend) stationary, $H_1 = \rho_i < 0$ for at least one *i*. To test the null hypothesis, the CIPS statistic is calculated as the average of the individual CADF statistics:

$$\text{CIPS} = N^{-1} \sum_{i=1}^{N_i} t_i$$

where t_i is the OLS *t*-ratio of ρ_i in the above CADF regression (Herzer and Vollmer, 2012, p.496). Critical values are tabulated by Pesaran (2007).

In the Hadri-Kurozumi unit root test procedure, the null hypothesis of 'stationarity' is with cross-sectional dependence in the form of a common factor. This specification also allows for serial correlation in the disturbance (Hadri and Kurozumi, 2012).

$$y_{it} = z_t'\delta_i + f_t\gamma_i + \varepsilon_{it}, \varepsilon_{it} = \emptyset_{i1}\varepsilon_{it-1} + \cdots + \emptyset_{ip}\varepsilon_{it-p} + v_{it}$$

for *i* =1, …, N and *t* = 1, …, T, where z_t is deterministic. In this model, $z_t'\delta_i$ is the individual effect while f_t is one-dimensional unobserved common factor, γ_i is the loading factor and ε_{it} is the individual-spesific error-term. Two test statistics provided by the Hadri-Kurozumi test are:

$$Z_A^{SPC} = \frac{1}{\hat{\sigma}_{iSPC}^2 T^2} \sum_{t=1}^{T} (S_{it}^{\omega})^2$$

$$Z_A^{LA} = \frac{1}{\hat{\sigma}_{iLA}^2 T^2} \sum_{t=1}^{T} (S_{it}^{\omega})^2$$

Under the null hypothesis of stationarity the Z_A^{SPC} and the Z_A^{LA} are asymptotically distributed as standard normal.

Table 3 and Table 4 present the CADF (CIPS) and Hadri-Kurozumi unit root test results respectively. The CADF test results suggest that all variables are stationary except for the openness and investment variables, which are difference-stationary. According to the Hadri-Kurozumi test results the investment variable is difference stationary according to Z_A^{LA}, without trend, whereas all other variables are stationary at levels. [10]

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[10] Although the unit root tests mostly indicate stationarity of the series, due to the possibility of unit root in investment and openness variables, a panel cointegration test is employed prior to the model estimations. The LM bootstrap cointegration test developed by Westerlund and Edgerton (2007) is used, and according to the test results, the null of 'no cointegration' cannot be rejected for any of the model specifications.

Table 3. Unit Root Tests: CADF

Variable	Constant				Constant and Trend			
	CIPS Statistic	Critical Values			CIPS Statistic	Critical Values		
gdpgr	-2.883***				- 3.267***			
gdppcgr	-2.945***				-3.247***			
service	-2.506***				-3.026***			
stock	-2.511***				-2.776*			
stocksq	-2.800***	1%	-2.45		-2.926**	1%	-2.96	
open	-1.437	5% 10%	-2.25 -2.14		-1.968	5% 10%	-2.76 -2.66	
inf	-2.476***				-2.808**			
inv	-1.558				-2.557			
Δopen	-3.151***				-3.375***			
Δinv	-3.234***				-3.228***			

Δ indicates the lag operator. Lag length is taken 3. Critical values for the CIPS test are obtained from Pesaran (2007). *, **, *** indicate significance levels at the 10%, 5% and 1%, respectively.

Table 4. Unit Root Tests: Hadri-Kurozumi

Variable	Constant				Constant and Trend			
	Z_A^{SPC}		Z_A^{LA}		Z_A^{SPC}		Z_A^{LA}	
	Statistic	p-value	Statistic	p-value	Statistic	p-value	Statistic	p-value
gdpgr	-0.2471	0.598	-0.121	0.505	-1.0010	0.842	-0.6881	0.754
gdppcgr	-0.4501	0.674	-0.2270	0.590	-1.0086	0.843	-0.7274	0.767
service	-0.6389	0.739	0.3337	0.369	-1.1861	0.882	0.1037	0.459
stock	-1.6293	0.948	-0.5047	0.693	-1.3156	0.906	-1.4626	0.928
stocksq	-1.1825	0.882	0.5675	0.285	-1.1466	0.874	-1.7150	0.957
open	-1.2811	0.899	-2.5252	0.994	-2.7069	0.996	-3.4480	0.999
inf	-1.0696	0.858	0.0348	0.486	0.2780	0.390	0.986	0.162
inv	0.9569	0.169	2.4103	0.008	-2.0228	0.979	-2.6654	0.996
Δinv	-	-	-0.2279	0.590	-	-	-	-

Δ indicates the lag operator. Lag length is 3.

In a panel data analysis it is also important to investigate whether estimated coefficients are homogeneous or not across the panel. The homogeneity assumption for the parameters is not able to capture the heterogeneity due to county specific characteristics. To identify homogeneity of slope coefficients in panel, Pesaran and Yamagata (2008) developed the following delta statistic

$$\tilde{\Delta} = \sqrt{N} \left(\frac{N^{-1}\tilde{S} - k}{\sqrt{2k}} \right)$$

When $(N, T) \rightarrow \infty$, and the error terms are normally distributed, the $\tilde{\Delta}$ test has an asymptotic standard normal distribution under the null hypothesis of 'homeogeneity'. The small sample properties of the $\tilde{\Delta}$ test can be improved when there are normally distributed errors by using the following mean and variance bias adjusted version

$$\tilde{\Delta}_{adj} = \sqrt{N} \left(\frac{N^{-1}\tilde{S} - E\,(\tilde{Z}_{it})}{\sqrt{var(\tilde{Z}_{it})}} \right)$$

where $E\,(\tilde{Z}_{it}) = k$, $\sqrt{var(\tilde{Z}_{it})} = 2k(T - k - 1)/(T + 1)$ (Pesaran and Yamagata, 2008).

Table 5 presents the results for cross-sectional dependence and homogeneity tests for the regressions. The Breusch-Pagan LM test statistics given in the first part of the table suggest cross-sectional dependence in all model specifications. According to the delta tests, the null hypothesis of homogeneity cannot be rejected for Model II and III at 5% significance level for any of the growth variables, whereas the null hypothesis is rejected for Model I at 5%. Model II for *gdpgr* and and Model III for *gdppcgr* indicate heterogeneity at 10%.

Table 5. CDLM Cross-Sectional Dependence and Delta Homogeneity Tests for Models

Model	*CDLM*		$\tilde{\Delta}$		$\tilde{\Delta}_{adj}$	
	Statistic	p-value	Statistic	p-value	Statistic	p-value
			gdpgr			
I	124.455	0.001	1.995	0.023	2.231	0.013
II	127.377	0.000	1.518	0.092	1.518	0.065
III	124.553	0.001	1.106	0.134	1.264	0.103
			gdppcgr			
I	124.930	0.001	1.618	0.053	1.809	0.035
II	128.585	0.000	1.093	0.137	1.248	0.106
III	126.978	0.000	1.207	0.114	1.379	0.084

4.2. Estimation and Discussion of the Results

In a panel analysis, due to common factors included in error terms, estimations can be inconsistent and misleading, and hence, it is crucial to consider cross-sectional dependence that arises from multiple factors that cannot be observed or controlled for. In the last few years some estimation techniques have been developed to control for cross-sectional dependence across the panel. In this study we make use of the common correlated effects (CCE) estimator advanced by Pesaran (2006) to account for the cross-sectional dependence as well as heterogeneity in the data. The CCE estimator asymptotically eliminates strong as well as weak forms of cross-sectional dependence in large panels (Pesaran, 2006). It can be used regardless of whether T is greater than N or not.

There are two versions of the CCE estimator for the mean value of individual coeffcients, β_i. The CCE mean group estimator (CCEMG) is used in the presence of heterogeneity in the data and allows coefficients of interest to vary across countries. The CCEMG estimator, $\hat{b}_{MG}$ is defined as a simple average of the individual CCE estimators, $\hat{b}_i$ of β_i.

$$\hat{b}_{MG} = N^{-1} \sum_{i=1}^{N} \hat{b}_i.$$

If the individual slope coefficients, β_i, are the same, efficiency can be achieved from pooling observations over cross-section units. That is how the second CCE estimator, the common correlated effects pooled (CCEP) estimator, performs. The CCEP estimator, $\hat{b}_P$ is defined by

$$\hat{b}_P = \left(\sum_{i=1}^{N} \theta_i X_i' \bar{M}_\omega X_i \right)^{-1} \sum_{i=1}^{N} \theta_i X_i' \bar{M}_\omega y_i.$$

y_{it} is the observation on the *i*th cross-section unit at time *t* for *i* =1, 2, …, N, t = 1, 2, …, T and supposed to be generated according to the linear heterogeneous panel data model

$$y_{it} = \alpha_i' d_t + \beta_i' x_{it} + e_{it},$$

where d_t is a *n* × 1 vector of observed common effects (including deterministic variables such as intercepts or seasonal dummies), x_{it} is a *k* × 1 vector of observed individual-specific regressors on the *i*th cross-section unit at time *t*, and the errors have the multifactor structure

$$e_{it} = \gamma_i' f_t + \varepsilon_{it},$$

in which f_t is the *m* × 1 vector of unobserved common effects and ε_{it} are the individual-specific (idiosyncratic) errors assumed to be independently distributed of (d_t, x_{it}) (Pesaran, 2006).

The common correlated effects mean group (CCEMG) and the common correlated effects pooled (CCEP) estimates are reported in Table 7. The results are given in two sets of model

specifications for the alternative growth variables, i.e. the growth of real GDP (*gdpgr*)and growth of real per capita GDP (*gdppcgr)*. The CCEMG and CCEP estimators are applied depending on the results suggested by the homogeneity tests given in Table 5. Accordingly, except for the specifications of Model II for the growth rate of real GDP and Model III for the growth of real per capita GDP variables, the CCEP estimator is employed for the rest of the specifications.

Table 6. Common Correlated Effects (CCE) Estimates for the Panel

Variables	Model I	Model II	Model III
gdpgr			
Stock	-0.1219** (-2.378)	-0.1197** (-2.032)	-0.0585 (-1.037)
service	--	-0.0166 (-0.421)	--
Open	0.1224* (1.456)	0.0874 (0.858)	0.0096 (0.372)
Inf	-0.1372** (-2.277)	-0.1175** (-2.083)	-0.0004 (-0.353)
Inv	0.0959 (0.941)	0.1964* (1.643)	0.1063* (1.553)
stocksq	--	--	0.0005* (-1.396)
gdppcgr			
Stock	-0.1170** (-2.309)	-0.1226*** (-5.625)	-0.2088 (-1.085)
service	--	-0.0055 (-0.205)	--
Open	0.1198* (1.468)	0.0123 (0.432)	0.0377 (0.347)
Inf	-0.1368** (-2.252)	-0.0001 (-0.106)	-0.1296** (-2.042)
Inv	0.1067 (1.069)	0.1742*** (2.903)	0.1114 (0.753)
stocksq	--	--	0.0019 (1.083)

t-statistics are given in parantheses and critical values for the *t*-ratios are 2.32, 1.64 and 1.28 for 1%, 5% and 10% respectively.
*, **, *** indicate significance levels at the 10%, 5% and 1%.

Model I for each growth variable indicates a statistically significant negative impact of debt stock on economic growth, providing support to the most of the previous studies. According to the results in Table 7, a one percentage point increase in debt stock leads to around 0.12 percentage points decrease in economic growth. The openness and inflation variables also have significant coefficients with expected signs, at 1% and 5% respectively. The coefficients of the variables appear to be stable with similar values across the regressions.

However, Model I cannot capture potential effects of the debt service payments on economic growth. Due to the possible implications discussed above, the debt service-to-exports ratio is included in the equations of Model II in order to avoid omitted variable problem. Although the results do not indicate any significant impact through debt service on economic growth, the debt stock ratio sustains significant coefficients around -0.12 per cent in both equations. Moreover, the investment variable, which is critical for economic growth, appears to be sensitive to the inclusion of debt service and becomes significant with a positive sign. One percentage point increase in the investment-to-GDP ratio results in 0.20 and 0.17 percentage points increases in Model II regressions. Furthermore, the model specification for the GDP growth has a negative significant effect of the inflation variable around 0.12 per cent.

To investigate the debt overhang effect with a debt Laffer curve, the nonlinear specification incorporating the debt ratio with its square is employed via Model III. However, our results for the model do not indicate any nonlinear relationship between debt and economic growth. Furthermore, the results seem to be rather poor in general, in the GDP growth equation the investment ratio and the square of debt stock are highly significant, whereas in the model for the GDP per capita growth the only significant variable is the inflation rate.

Overall, therefore, our results seem to indicate that external debt has a negative impact on economic growth through the debt stock rather than liquidity constraints stemming from debt service payments directly. On the other hand, our model specifications do not reveal a debt Laffer curve with a threshold as suggested in the previous studies, the upward sloping 'right' side of the curve is not validated by the data of the study. It can be argued that a much larger sample of countries including developed economies as well as low-income countries might give an inverse U-shaped curve.

The negative impact of debt detected in the study may be caused by disincentive effects of outstanding debt on the level of investment, working through concerns regarding future macroeconomic instability or by a fall in the general productivity level owing to the inefficient short-term investment decisions. Although the implications of debt service payments cannot be captured directly by the debt service variable in the models of the study, they are likely to have an adverse impact through the misallocation of resources.

As discussed above, we focus on Model II and continue our analysis with the country-specific results estimated by the CCEMG estimator for the GDP growth rate as the related model has appeared to be heterogeneous. Table 8 reports the regressions for each country in the panel.

Table 7. Common Correlated Effects (CCE) Estimates for the Countries

Countries	*stock*	*service*	*open*	*inf*	*inv*
Argentina	0.067 (0.30)	0.091 (0.98)	-0.310 (-0.36)	-0.005*** (-2.50)	0.935 (0.79)
Brazil	0.134 (0.62)	-0.047 (-0.77)	-0.190 (-0.60)	0.000 (0.00)	0.322* (1.24)
Bulgaria	-0.119*** (-3.72)	-0.035 (-0.44)	-0.056 (-0.74)	-0.006*** (-3.00)	0.198*** (2.51)
Colombia	0.115 (0.82)	-0.021 (-0.72)	-0.281 (-0.99)	0.064** (1.64)	0.369** (1.90)
India	-0.051 (-0.36)	-0.049 (-0.25)	-0.100 (-0.49)	-0.395 (-1.03)	0.509* (1.34)
Indonesia	-0.015 (-0.63)	0.098 (0.95)	0.127 (1.22)	-0.288*** (-5.33)	-0.236** (-2.19)
Malaysia	-0.205** (-2.07)	-0.383** (-1.42)	-0.097*** (-2.49)	-0.017 (-0.14)	0.034 (0.28)
Mexico	-0.182** (-2.28)	0.172** (1.89)	0.196* (1.32)	0.012 (0.40)	0.759 (1.17)
Pakistan	-0.091 (-0.98)	-0.011 (-0.13)	0.098 (0.52)	-0.005 (-0.11)	0.145 (0.64)
Peru	-0.205*** (-2.66)	-0.100* (-1.54)	0.992*** (3.62)	-0.001 (-0.33)	0.083 (0.34)
Phillipines	-0.169* (-1.63)	0.053 (0.87)	-0.009 (-0.21)	-0.256*** (-3.46)	-0.741*** (-2.55)
Thailand	-0.124** (-1.97)	-0.118 (-0.67)	0.113** (1.77)	-0.605*** (-2.98)	0.301*** (3.14)
Turkey	-0.711*** (-3.91)	0.134 (0.52)	0.651**** (3.22)	-0.026 (-0.60)	-0.126 (-0.61)

t statistics are given in parentheses. Critical values for t-ratios are 2.32, 1.64 and 1.28 for 1%, 5% and 10% respectively. *******, ******, * indicate significance levels at the 1%, 5% and 10%.

According to the results given in the table, in seven of the countries the debt stock variable has a negative and statistically significant coefficient. In two of those, the debt service also has a negative and significant coefficient whereas the impact of debt service on economic growth is unusually positive in Mexico. In some of the equations the investment ratio appears to be significant along with or without the debt variable(s). The significant openness and inflation variables generally have the signs as expected. The equation for Bulgaria reflects the most similar results of the panel estimation, and

Thailand has the highest number of explanatory variables. The country-specific regressions for Argentina, Brazil, India and Pakistan do not indicate any prevailing results.

5.CONCLUSION

This paper aims to make a contribution to the understanding of the impact of external debt on economic growth by using the data for a group of middle-income countries over the period of 1985-2013. To this end the study employs the common correlated effects (CCE) framework, which considers possibilities of cross-sectional dependence and heterogeneity in the panel.

According to the findings of the study, there is a negative linear impact of external indebtedness on economic growth in the countries of interest. The main channel through which debt has an impact on economic performance appears to be the debt stock rather than liquidity constraint effect represented by debt service directly. On the other hand, contrary to the previous studies we do not find an inverse debt Laffer curve for the debt-growth relationship. The uncertainty created by indebtedness may discourage new investments, and furthermore, may be distortionary for investment decisions, leading to less efficient and short-term investment choices, hence impeding economic growth.

The level of external debt that is supportive for economic development and growth also depends on various issues including the productivity of investment and the proportion of external debt devoted to investment compared to its use in non-productive areas. Furthermore, it is difficult to identify the amount of external debt that is growth enhancing as countries vary in terms of general economic conditions, institutions, and political and other country-specific risks. Therefore, given the negative impact of external debt on economic growth, the country analyses are critical for taking relevant measures to direct external debt towards long-term productive investments, which are expected to enhance economic performance. Economic policies should be implemented considering specific conditions of the countries, and obviously, in an environment where the external resources are mostly provided by international private creditors and where the countries are globally more dependent make this process more complicated and challenging.

REFERENCES

- Arnone, M.; Bandiera, L. and Presbitero, A.F. (2005) "External Debt Sustainability: Theory and Empirical Evidence", *Catholic University of Milan (Piacenza) Working Paper*, No. 33, December.

- Avramovic, D.; Husain, S.S.; de Weille, J.; Froland, J.; Hayes, J. P.; Wyss, H. (1964). *Economic Growth and External Debt*. Washington, D.C.: The World Bank.

- Bhattacharya, R. and Clements, B. (2004) *Finance and Development*, 41(4), 48-50.

- Breusch, T.S. and Pagan, A.R. (1980) "The Lagrange Multiplier Test and Its Applications to Model Specification in Econometrics", *Review of Economic Studies,* 47(1), 239-253.

- Chenery, H.B. and Strout, A.M. (1966) "Foreign Assistance and Economic Development", *American Economic Review*, 56(4), 679-733.

- Chowdhury, A.R. (2001) "Foreign Debt and Growth in Developing Countries: A Sensitivity and Causal Analysis", *WIDER Discussion Papers,* World Institute for Development Economics (UNU-WIDER), No.2001/95.

- Claessens, S. (1990) "The Debt Laffer Curve: Some Estimates", *World Development*, 18(12), 1671-1677.

- Claessens, S.; Detragiache, E.; Kanbur, R. and Wickham, P. (1996). "Analytical aspects of the debt problems of heavily indebted poor countries", *World Bank Policy Research Working Paper Series,* No.1618.

- Clements, B.; Bhattacharya, R. and Nguyen, T.Q. (2003) "External Debt, Public Investment, and Growth in Low-Income Countries", *IMF Working Paper,* No.03/249.

- Cohen, D. (1993) "Low Investment and Large LDC Debt in the 1980s", *American Economic Review*, 83(3), 437-449.

- Cordella, T.; Ricci, L.A. and Ruiz-Arranz, M. (2005) "Debt Overhang or Debt Irrelevance?Revisiting the Debt-Growth Link", *IMF Working Paper*, No.05/223.

- Desphande, A. (1997) "The Debt Overhang and the Disincentive to Invest", *Journal of Development Economics*, 52, 169-187.

- Easterly, W. (2002) "How Did Heavily Indebted Poor Countries Become Heavily Indebted? Reviewing Two Decades of Debt Relief", *World Development*, 30(10), 1677-1696.

- Elbadawi, I.; Ndulu, B. and Ndung, N. (1997) "Debt Overhang and Economic Growth in Sub-Saharan Africa," in *External Finance for Low-Income Countries,* ed. by Iqbal, Zubair and Ravi Kanbur, Washington: IMF Institute, 49-76.

- Eratas, F. and Basci Nur, H. (2013) "Dış Borç ve Ekonomik Büyüme İlişkisi: 'Yükselen Piyasa Ekonomileri' Örneği", Marmara Üniversitesi İİB Dergisi, 35(2), 207-230 (in Turkish).

- Fosu, A.K.F. (1996) "The Impact of External Debt on Economic Growth in Sub-Saharan Africa", *Journal of Economic Development*, 21(1), 93-118.

- Greene, J. and Villanueva, D. (1991) "Private Investment in Developing Countries", *IMF Staff Papers*, 38(1), 33-58.

- Griffin, K. and Enos, J. (1970) "Foreign Assistance: Objectives and Consequences", *Economic Development and Cultural Change*, 18, 313-327.

- Hadri, K. and Kurozumi, E. (2012) "A Simple Panel Stationarity Test in the Presence of Serial Correlation and a Common Factor", *Economics Letters,* 115, 31–34.

- Herzer, D. and Vollmer, S. (2012) "Inequality and Growth: Evidence from Panel Cointegration", *Journal of Economic Inequality*, 10, 489-503.

- International Monetary Fund (2002) "The Enhanced HIPC Initiative and the Achievement of Long-Term External Debt Sustainability", *Staff Papers*, April 2002.

- Krugman, P (1988) "Financing vs. Forgiving a Debt Overhang", Journal of Development Economics, 29, 253-268.

- Oks, D. and van Wijnbergen, S. (1994) "Mexico After the Debt Crisis: is Growth Sustainable?", *World Bank Policy Research Working Papers*, No.1378.

- Patillo, C.; Poirson, H., and Ricci, L. (2002) "External Debt and Growth", *IMF Working Paper,* No.02/69 (also published as Patillo, C.; Poirson, H., and Ricci, L. (2011) "External Debt and Growth", *Review Economics and Institutions*, 2(3), 1-30.)

- Patillo, C.; Poirson, H., and Ricci, L. (2004) "What Are the Channels Through Which External Debt Affects Growth?", *IMF Working Paper*, No.04/15.

- Pesaran, M.H. (2004) "General Diagnostic Tests for Cross Section Dependence in Panels", *University of Cambridge Working Papers,* No.0435.

- Pesaran, M.H. (2006) "Estimation and Inference in Large Heterogeneous Panels with a Multifactor Error Structure", *Econometrica*, 74(4), 967-1012.

- Pesaran, M.H. (2007) "A Simple Panel Unit Root Test in Presence of Cross-Section Dependence", *Journal of Applied Econometrics*, 22, 265–312.

- Pesaran, M.H. and Yamagata, T. (2008) Testing slope homogeneity in large panels, *Journal of Econometrics,* 142, 50–93.

- Presbitero, A.F. (2005) "The Debt-Growth Nexus: a Dynamic Panel Data Estimation", *Universita Politecnica Delle Marche, Department of Economics Working Paper*, No.243.

- Sachs, J. (1989) "The Debt Overhang of Developing Countries" in Calvo, G.A.; Findlay, R; Kouri, P and De Macedo, JB (eds) *Debt Stabilization and Development: Essays in Memory of Carlos Diaz Alejandro*. Oxford: Basil Blackwell, 80-102.

- Savvides, A. (1992) "Investment Slowdown in Developing Countries During the 1980s: Debt Overhang or Foreign Capital Inflows," *Kyklos*, 45(3), 363-378.

- Schclarek, Alfredo (2004) "Debt and Economic Growth in Developing and Industrial Countries", *Lund University, Department of Economics Working Papers*, No.2005/34.

- Serieux, J. and Samy, Y. (2001) "The Debt Service Burden and Growth: Evidence from Low-Income Countries", presented at WIDER Conference on Debt Relief, 17-18 August 2001, Helsinki, Finland.

- Serven, L. (1997) "Uncertainty, Instability, and Irreversible Investment: Theory, Evidence, and Lessons for Africa", *World Bank Policy Research Working Paper,* No.1772.

- Westerlund, J and Edgerton, L.E. (2007) "A Panel Boostrap Cointegration Test", *Economics Letters*, 97, 185-190.

TRACING BACK THE SIGNS OF COMPLEXITY THINKING IN MANAGEMENT: MARY PARKER FOLLETT RE-VISITED

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ABSTRACT

The modernist stream of thought had immensely influenced the theories of organizational management in the early twentieth century. Equilibrium-oriented and universally valid reductionist approaches viewed organizations as machines that could be broken down into pieces, hence, behavior of the whole could be understood from the knowledge of its parts. Mary Parker Follett, owing to her valuable contribution ahead of her time, emerges as a prominent figure in the history of management thought and organizational studies. Most of what is written and discussed today in the field of organization studies and management such as power, authority, group dynamics, leadership, coordination and governance have been derived from Mary Parker Follett's corpus. She had built the bridge between complexity thinking and management almost four decades before the introduction of nonlinear dynamics to scientific research. Although the actual terminology of nonlinear dynamics was not employed in her postulations Mary Parker Follett's works provide profound insights for the field of management under the prevailing global circumstances where the impact of repeated attempts to design the 'whole' seems to have been neutralized since it is barely enough to predict the outcomes of the upward-causality from the knowledge of the parts. A thorough analysis of her writings reveals that she had accurately anticipated the problems associated with the contemporary organizational settings as well as incorporating nonlinear dynamics into management thinking. This conceptual paper intends to draw inspiration from Mary Parker Follett's works with special emphasis on the links between her conceptions and complexity thinking in the field of management.

Rereading Mary Parker Follett is like entering a zone of calm in a sea of chaos. Her work reminds us that even in our fast-paced world – in which 18 months can constitute a high-tech product life cycle and "15 minutes" a person's assigned allotment of fame – there are truths about human behaviour that stand the test of time. They persist despite superficial changes, like the deep and still ocean beneath the waves of management fad and fashion.

Rosebeth Moss Kanter (1995)

1.INTRODUCTION

Organizations are supposed to constantly build new capabilities in order to be able sense and respond to the shifting needs of their target markets in a hyper-competitive global environment where any attempt to comprehend the nature of the emergent phenomena turns out to be futile. Managers of twenty-first century are incapable to surmount the number of variables involved and keep track of the interactions between them. This situation evokes the infamous butterfly effect, which implies that a butterfly fluttering its wings in South America can cause a tornado in Far East. This metaphor refers to how small perturbations in the initial condition of a system might trigger unexpectedly major changes afterwards. Over the last two decades, there has been a significant surge in the number of studies in management field regarding the applicability of complexity principles to organizational settings. This is plausible given the current level of interconnectedness and interdependence in an integrated global economy. The high volatility of global markets entails coping with the dynamics of continuous change. The 'machine metaphor' seems to have already fallen short given the prevailing conditions of global business climate. It is the very reason why observations penned by Mary Parker Follett eight decades ago worth to mention and ponder. Her postulations were flourished under the heavy ideological climate of modernism and she anticipated way ahead of her time approximately four decades before the inception of vigorous scientific research in nonlinear dynamics. This paper intends to cast light on the conceptual linkages between Follett's ideas and the assumptions of complexity science based on her writings inductively supportive of the operation of nonlinear dynamics within social world (Mendenhall et.al., 2000). She had employed terms such as 'self-organizing', 'interaction', 'diversity', 'evolution', 'novelty', 'experience', which are not only associated with complexity science, also acknowledged as the building blocks of innovation in organizations. Her ideas on centrality of relationships, constructive conflict, power, authority, control, leadership and co-ordination will guide managers along their struggles to transform organizations into ecologies of innovation. In order to be able to grasp the insight of her contribution and demonstrate how the assumptions of the complexity thinking and her conceptions intertwine with one another, the next section intends to deal with the assumptions of the modernist stream of thought by which early theories of management were significantly influenced. The third section of the paper draws a general framework of complexity thinking through introducing nonlinear dynamics at play in a complex system. The fourth section reveals how Mary Parker Follett's postulations overlap the contemporary efforts to incorporate nonlinear dynamics into organizational studies although she did not employ the actual terminology.

2.HAUNTED BY THE GHOST OF MODERNISM: MECHANISTIC VIEW OF ORGANIZATIONS

The modernist paradigm was predicated on scientific principles developed by Newton, LaPlace and Descartes derived from the assumption that the natural state of a system had to be reaching and sustaining an equilibrium so that the future states of a given system and the behavior of the whole could be predicted (Dooley, 1997). Complex social phenomena were viewed as being composed of variables that manifested linearity in their relationships leading to a definition of organizational experiences from reductionist,

deterministic, and equilibrium-oriented perspectives (Dooley, 1997; Mendenhall et.al., 2000; Marion, 1999). Modernity had launched a new world of meaning in which society valued rationality encouraging the implementation of efficiency oriented methods to accomplish organizational goals (Lune, 2010). Wagner (2012) provides a definition of modernity as 'the belief in the freedom of human being – natural and inalienable, as many philosophers presumed – and in the human capacity to reason combined with the intelligibility of the word, that is, amenability to human reason.'

The reflections of modernist assumptions were conspicuous in the early theories of management and organizations. McAuley et.al (2007) describes the three key aspects of modernism: the modernist ontology, the modernist epistemology and the modernist technologies. Modernists believed that the world was ordered and there were underlying systems to be unveiled. Any system could be ordered and rationally structured. This called for scientifically designed work processes to ensure ordered and systematic structures. The best way to ensure rationality was to rely on calculation of relevant empirical data and measurement of the variables to attain solid facts. The efficiency of outputs and performance of employees were constantly measured and management's timely intervention was deemed necessary when discrepancy occurred between calculable predictions and the actual outcome. Thus, there should be a management elite equipped with techniques that enabled them to process information and to exercise rational control over the members of the organization. The distinction between management and workers assumed that the former would take all the major decisions concerning the methods of production, while the latter would more or less passively conform to management's authority and accept their role in the overall production process (Sheldrake, 2003). Modernist organization theories regarded actions as sequenced and actors behave mechanistically in their endeavor to accomplish rationally declared ends to fulfill organizational goals (Pettigrew, 1990). The tendency to hold reductionism, determinism and equilibrium as core principles was prevalent in organizational and managerial studies – indeed, all social science was influenced by this paradigm (Dooley, 1997). Wagner (2012) portrays how the principles suggested by modernist stream of thought influenced the development of theories in social sciences as follows:

> These principles were seen as universal, on the one hand, because they contained normative claims to which, one presumed, every human being would subscribe and, on the other, because they were deemed to permit the creation of functionally superior arrangements for major aspects of human social life, most importantly maybe the satisfaction of human needs in market-driven, industrial production and the rational government of collective matters through law-based and hierarchically organized administration. Furthermore, they were seen as globalizing in their application because of the interpretative and practical power of normativity and functionality.

Mechanistic approaches had their own limitations in spite of their relative success on certain aspects of organizational operations (Morgan, 2006). First, a mechanistic way of managing may render the organization incapable to adapt the changing circumstances in its environment. Second, a mindless and unquestioning organizational structure may arise, which stifles innovation driven managerial endeavors. Third, when the interests of those working in the company do not overlap the goals the organization was designed to achieve pernicious effects will be inevitable. Lune (2010), deriving from the Marx's

economic critique, mentions that 'if our identities and efforts are kept separate from any sort of goal or value to be found in the work then we are alienated from our labor'. The rise of systems thinking and cybernetics depicted the limitations of the ingrained methods trying to understand the whole through analysis of its parts. Cybernetics and general systems theory emerged after World War II in favor of replacing reductionism with an appreciation for modeling interactions instead of simplifying them away (Anderson, 1999). General Systems Theory (GST) was developed during 1950s by Viennese theoretical biologist Ludwig von Bertalanffy based on the idea that physical systems were considered as closed systems, which was irrelevant to living systems, as such were open systems (Merali & Allen, 2011). According to GST when systems confront disturbances, the cells in the organisms (the subsystems in an organization) go through a series of change in order to adjust to the new circumstances, thereby, maintain the system as a whole (McAuley et.al., 2007). Cybernetics concentrated on mechanisms for control and co-ordination and gave rise to management theories for organizational design and conceptualized feedback loops between system components as regulating mechanisms for the system's performance (Merali & Allen, 2011).

However, GST and cybernetics, both, addressed deterministic dynamical systems, systems where a set of equations determine how a system moves through its space from time t to time t + 1 (Anderson, 1999). In the second half of the twentieth century, Herbert Simon's conceptualization of bounded rationality and Henry Mintzberg's concept of emergent strategy were conceded as milestones seeking perspicacious insights into dynamics of interaction within the organization and between the organization and its environment (Merali & Allen, 2011). Interconnectedness happened to be the key component impelling markets in unforeseen directions. When all organizational actors are interconnected with one another, in case feedback loops dampen out change decay might occur or if changes keep reverberating throughout the system, then, chaos ensues (Anderson, 1999). Hernes (2014) suggests that the frameworks commonly used in organization studies are not capable of capturing the actual complexity confronted by the managers, rather 'they confine complexity by locating it within organizational boundaries, as if managers were like Weberian officials trapped down in an administrative bunker, grappling more or less competently with neatly parceled chunks of complexity.'
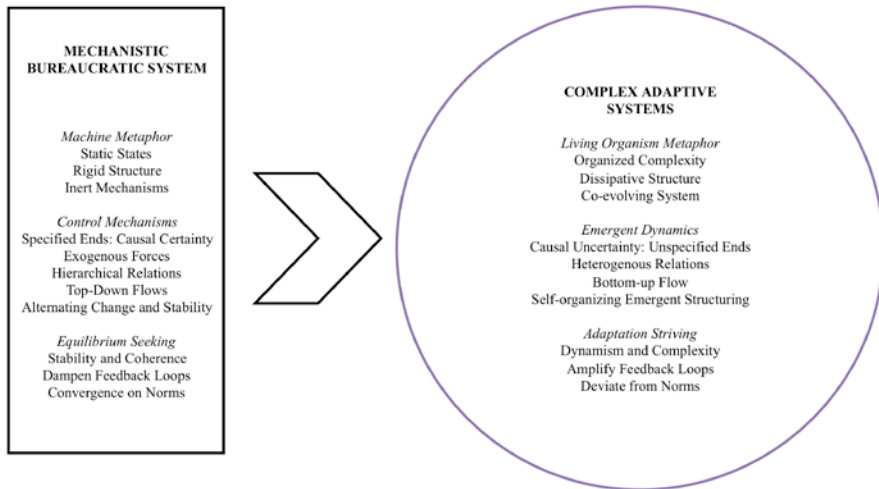
3.TRANSCENDING BEYOND TIME AND SPACE

> … we presently find ourselves in a time of 'interrregnum' – when the old ways of doing things no longer work, the old learned or inherited modes of life are no longer suitable for the current *conditio humana*, but when the new ways of tackling the challenges and new modes of life better suited to the new conditions have not as yet been invented, put in place and set in operation.

The above quotation from Bauman's (2000/2012:vii) pioneering work 'Liquid Times' depicts the zeitgeist of the times we are living in. The fluidity metaphor is usually employed to go beyond the limits of unity, coherence and solids. Bauman (2000/2012) uses 'liquids' - one variety of fluids - and 'solids' with reference to their relationship between space and time. Behaviour exhibited by solids is a result of the type of bonding that holds the atoms and their structural arrangements together, so here 'bonding' is a term that signifies the stability of solids. Fluids, on the other hand, do not keep to any

shape for long and are always prone to change it, so it is the flow of time that counts more than the space they occupy. Bauman (2000/2012) considers fluidity or liquidity as relevant metaphors in order to be able to grasp the essence of the present. Embracing this metaphor entails to perceive what really exists is not things but things in the making. Such shift from being to becoming is an important contribution of process philosophy to an epistemology of fluids (Styhre, 2007).

Complexity is a reflection of fluid epistemology and concentrates on the dynamic behaviour of complexly interacting interdependent and adaptive agents (Uhl-Bien et.al., 2007). Complex systems consist of myriads of agents who interact with each other in unpredictable ways; they are sensitive to changes in initial conditions; they develop adaptive behavior to the changes in the environment; they oscillate between stability and instability; and are characterized by emergent order (Plowman et.al., 2007). Complexity arises when agents with different perspective and information interact with each other in a mode of mutual influence causing the emergence of unanticipated novel outcomes (Goldstein et.al., 2010). Technological advancements and the process of globalization is constantly reshaping competitive landscape, exposing organizations to complexity (Hitt, 1998). We are going through an era of unprecedented global turmoil where seemingly improbable, the unanticipated, and the downright catastrophic appear to occur with alarming regularity (Chia, 2012). States and societies have become enmeshed in networks of interaction fostering magnitude and intensity of the global flows (Held & McGrew, 2003). The extent of the network of interactions could be observed in the financial crisis in Thailand in 1997, which first appeared as an isolated banking and currency crisis in an emerging market country and soon generated global financial distress with severe effects on markets (Keohane & Nye Jr., 2003). Events in any part of the world can have consequences for developments in every other part of the world, as a matter of fact, the Internet and other technologies have collapsed time and space (Rosenau, 2003). Merali & Allen (2011) suggest that under the prevailing conditions of global business climate, any attempts to design an organization to ensure structural stability is nothing more than an intellectual construction with limited capability to encompass all interactions between the agents (system components) given the constraints imposed by the modeller's bounded rationality. Embracing nonlinearity in organizational studies calls for adopting a new mindset; a one that supersedes what has been imposed by machine metaphor (Figure 1). In complex (adaptive) systems, the focus is no longer on discrete components, events or systems, instead, interactions and networks that connect individual agents appear as the indispensable quality of such systems (Hazy et.al., 2007). Chia's (2012:115) argument puts special emphasis on the need for incorporation of complexity into our way of thinking:

> A complex, perpetually changeable, and inextricably interconnected world, however, calls for complex, processual thinking: thinking that is concretely grounded in the intimacy and immediacy of pure lived experience; thinking that acknowledges the reality of spontaneous, self-generated social orders, entities, and institutions; thinking that accepts and embraces the inherent messiness, contradictions, and ambiguities of reality and thinking that overflows our familiar categories of thought.

Figure 1. Key Assumptions of Mechanistic Systems and Complex Systems

MECHANISTIC BUREAUCRATIC SYSTEM

Machine Metaphor
Static States
Rigid Structure
Inert Mechanisms

Control Mechanisms
Specified Ends: Causal Certainty
Exogenous Forces
Hierarchical Relations
Top-Down Flows
Alternating Change and Stability

Equilibrium Seeking
Stability and Coherence
Dampen Feedback Loops
Convergence on Norms

COMPLEX ADAPTIVE SYSTEMS

Living Organism Metaphor
Organized Complexity
Dissipative Structure
Co-evolving System

Emergent Dynamics
Causal Uncertainty: Unspecified Ends
Heterogenous Relations
Bottom-up Flow
Self-organizing Emergent Structuring

Adaptation Striving
Dynamism and Complexity
Amplify Feedback Loops
Deviate from Norms

Source: Hazy et.al., (2007)

Hence, organizations could be referred to as networks of social interaction in which members of the organization are supposed to extract new meanings and solutions via bottom-up structuration, moving the system to a more desirable level of competitiveness. In nonlinear dynamic systems the causal relationships between independent and dependent variables are replaced by symbiotic relationships where interdependent co-evolution is the main driver of the emergence of innovative adaptive organizational practices (Goldstein et.al. 2010). Due to the richness of information flow between the agents, order is emergent, organic and unpredictable (Uhl-Bien et.al, 2007). Diversity within organizations triggers evolution that eventually results in coming-into-being of superior level processes enabling adaptability. Evolution seems plausible when dynamics of interaction are fluid and diversity, tension and conflict are embedded in the thematic patterning of communicative interaction (Stacey, 2001).

4. IDEAS AHEAD OF THEIR TIME: THE FIRST ENCOUNTER OF MANAGEMENT THINKING WITH NONLINEARITY

While the early theories of management took the individual as the key focus of analysis and worked outwards, Follett's approach to the understanding of management was recognizably different in nature from the dominant stream of thought. Unlike the conventional scientific managers who based their ideas on the analysis of tasks via breaking them down into their constituent parts and artificially reconstructing them, she began with accepting the complexity of social situations and focused on the working group and the need to integrate individual and group efforts within the productive whole (Sheldrake, 2003). She placed relationships in the centre of her conceptualizations. Follett argued that the fundamental organizational challenge is the ability to build and maintain dynamic and harmonious human relationships. Her key concepts such as 'coordination', 'constructive conflict', 'integration' and 'power with' are all centred on human

relationships and they are all concerned with ways of promoting a creative dynamic in those relationships that is based on consensus (Child, 2013). A clear evidence of her position against the mechanistic view of management imposed by modernism could be observed: 'the idea of mastering environment is unfortunate because we have carried it over into social relations; it becomes our duty to conquer all external circumstances, nature and other men too' (Follett, 1924/2013: 119). Follett highlighted the need to shy away from static expressions with an attempt to discern the difference between 'being' and 'becoming' and argued that "Integrated organism is unfortunate, for the organism is the continuing activity of self-organizing, self-maintaining. We must be careful of the "eds" because they lead to "wholes", the wrong kind of wholes, the influence of the whole on the parts" (Follet, 1924/2013:58). The logic of Gestalt movement in psychology devised in Germany by Max Wertheimer and his associates Wolfgang Köhler and Kurt Koffka as an objection to the artificiality of the structuralists' study of consciousness (Tonn, 2003) reverberated in Follett's ideas about the role behaviour business organizations. The basis of Follett's thinking was the 'whole man' and, specifically, relations between the 'whole men' within the groups (Wren & Bedeian, 2009). She clung on to the assumption that whole is greater or different than the sum of its parts, which renders the reductionist way of dealing with social phenomena irrelevant. Follett (1924/2013: 105-106) wrote:

> This "total situation" is often looked at as a total *picture*; it is thought that you can get all the factors if you examine the picture in sufficient detail. But a total situation is never a total picture; it is a total activity in which the activity of individuals and activity of environment constantly interweave. What the social worker tries to do is to bring about the *kind* of interweaving from which it follows that further responses from individual, will mean a *progressive* experience.

For Follett, behaviour was the manifestation of innumerable complex interactions between an individual agent and the surrounding environment, thus, emerged out of intra and extra organic stimulation because the behavioural function was continuously being modified by itself (Mendenhall e.t.al., 2000). She argued that every social process had three aspects, which were 'the interacting', 'the unifying' and 'the emerging' and pointed out that '… our consideration of the interacting has shown us that the interacting and unifying are one. Shall we now therefore consider the emerging? We have already done that. Because the emerging is also part of the same process' (Follett, 1940/2013: 198). Her emphasis on interaction and emergence as complementary processes of effective conduct in organizations is reflected in complexity thinking, which adopts that a complex system is composed of interdependent, interacting subsystems and information about the functioning of the system is distributed throughout the networks of connection (Goldstein et.al., 2010). Her perspective regarding the interweaving of the agents with each other as well as the interweaving of each agent and the entire organizational system, clearly defied the decontextualized ideal of the Newtonian paradigm as could be seen in the following statement: "I have been saying that the whole is determined not only by its constituents, but by their relation to one another. I now say that the whole is also determined by the relation of whole and parts. Nowhere do we see this at work than in business administration" (Follett, 1940/2013:195).

In a complex system there is a vast amount of interacting agents each governed by some rule or force, which relates their behaviour in a given time period contingently to the

states of the other parts, thus, as individual agents respond to their own specific local contexts in parallel with other agents (parts), qualitatively distinct new patterns can arise as a consequence of upward causality (Maguire, et.al., 2011). According to Lichtenstein (2014) emergence is a totally different category from transformation and change and explains, "At the root of this difference is the fact that every case of organizational change and transformation involves the modification of existing elements, an alteration of design structures or internal processes or activity routines in the organization." Follett's (1924/2013:62) description of 'circular response' taps into the very essence of nonlinear dynamics and the role of emergence in an organizational setting:

> Through circular response we are creating each other all the time…The most fundamental thought about all this is that reaction is always reaction to a relating … In human relations, as I have said, this is obvious: I never react to you but to you-plus-me; or to be more accurate, it is I-plus you reacting to you-plus-me. "I" can never influence "you" because you have already influenced me; that is, in the very process of meeting, by the very process of meeting, we both become something different. It begins even before we meet, in the anticipation of meeting.

> Accurately speaking the matter cannot be expressed even by the phrase used above, I-plus-you meeting you-plus-me. It is I plus the-interweaving-between-you-and-me meeting you plus the-interweaving-between-you-and-me, etc., etc. If we were doing it mathematically we should work it out to the nth power."

Goldstein, et. al. (2010) calls this phenomena as 'interaction resonance', which signifies a richness of information flow that is generated and maintained through interactions over time. Follett's conception of circular response stressed the importance of the dynamic aspect of relationships and foreshadowed the concept of 'structuration', which Giddens (1984) later developed (Child, 2013). Follett held that the reality of organizational behaviour was in the interaction between subject (independent variable) and object (dependent variable), in the activity between them; she viewed the relationship between subject and object to be reciprocal and interdependent in nature, each being the function of another (Mendenhall et.al., 2000). Follett further explained the circular response in the following way: 'My response is not to a crystallized product of the past, static for the moment being; while I am behaving the environment is changing because the environment is changing because of my behaving, and my behaviour is a response to the new situation which I, in part, have created.' (Follett, 1924, quoted in Child, 2013:79). For Follett, relationships within social settings were continuous and integrative and the process of circular response is an evolving one – a continuous dynamic process (Child, 2013). Interaction and adaptation are prominent dynamics of complex systems and causal relationships between agents are described as symbiotic relationships referring to co-evolution. When two agents interact (in an organizational setting) their unique information and perspective generates difference, which eventually leads to unexpected novel outcomes (Goldstein, et.al., 2010). Ergo, countless and continuous interaction leads to the emergence of meaningful phenomena when there is diversity in the systems. The greater the diversity in a given system the higher the potential these differences can be amplified into emergent innovations (Goldstein, et.al., 2010).

In Follett's system of thought, difference was articulated as an indispensable feature of social systems because merging of differences in nature brought about new creation, and

that new creations then merged with other differing creations to produce new creations. (Mendenhall et.al., 2000). According to Gray (2012), in a healthy system both genes and ideas need to cross-pollinate so that creative ideas emerge when different ideas and concepts interact. Diversity is the source of adaptability, especially, at the micro-levels of individual differences and group level heterogeneity (Goldstein et.al., 2010). Follett (1940/2013) proposed that diversity paved the way to the emergence of novel solutions and emphasized that 'Instead of shutting out what is different, we should welcome it because it is different and through its difference will make a richer content of life. The ignoring of differences is the most fatal mistake in politics or industry or international life: every difference that is swept up into a bigger conception feeds and enriches society; every difference, which is ignored, feeds on society and eventually corrupts it'. Diversity enables conflict, which she regarded as vital for "progressive integration and with the emphasis placed upon novelty in the moment of synthesis, the critical moment of evolution" (Follett, 1924/2013:118). Diversity involves tension and conflict.

Emergence of creative experience, for Follett, required active participation in events or activities always in an effort to create something new (Tonn, 2003). Follett's insight was to recognize that the conflict was not necessarily pathological and a manifestation of failure, rather it was the appearance of difference (Child, 1995). It was the only way for making interaction resonance possible, which signifies a richness of information flow that is generated and maintained through interactions over time (Goldstein et.al., 2010). Follett, 1924/2013 stressed the importance of emergence of new ways of doing business and proposed that 'The confronting of diverse desires, the thereby revealing of 'values', the consequent revaluation of values, a uniting of desires which we welcome above all because it means that the next diversity will emerge on a higher social level – this is progress'. She underscored that unity (not uniformity) was our aim, and this could only be attained through the integration of differences and pointed out the "as long as we think of difference as that which divides us, we shall dislike it; when we think of it as that which unites us, we shall cherish it" (Follet, 1918). Therefore utilization of conflict as a means of integration of what is desirable in various viewpoints not only would serve to attract attention to where it was urgently required, but the integration of previously differing views could provide a valuable organizational dynamic (Child, 2013). Follett, extended her view to include competitors as she defined them as "…our opponents are our co-creators, for they have something to give which we have not" (Follett, 1924/2013:174). The way Follett identified competitors is quite similar to the one suggested by Adam M. Brandenburger and Barry J. Nalebuff in their seminal work 'Co-opetition' in which they attempted to reconceptualised competitors as complementors with whom the organizations create value in a cooperative process.

Follett's approach to leadership is also congruent with that of postulated by complexity leadership studies. Complexity thinking posits that leadership is not a linear event, however, it is embedded in a complex interplay of numerous interacting forces and in the network of relations (Uhl-Bien, et.al., 2007). Follett deprecated the idea of defining leadership as a function of personal traits and noted that 'the chief mistake in thinking of leadership as resting wholly on personality lies probably in the fact that the executive

leaders is not a leader of men only but of something we are learning to call the total situation … includes facts, present and potential, aims and purposes of members of the organization' (Follett, 1949/2013:51). Within the framework of complexity leadership theory leaders are reconfigured as enablers, who control only to the degree that they build structures for inhibiting or redirecting ideas that are not aligned with organizational mission or impair organizational abilities. Thus, both leaders and followers, which are intertwined with each other, are responsible for the total situation and avert any potential threat to its proper functioning. Leaders and followers in an organization '…are both following the invisible leader – the common purpose.' (Follett, 1949/2013:55). Complexity approach in leadership studies posits that leadership is a continuous process and engenders an organizational ecology in which qualitatively distinct phenomena emerge as an outcome of interaction among the constituent agents. Follett (1949/2013:52) held that 'the leader is one who can organize the experience of the group … when leadership rises to genius it has the power of transforming experience into power… He must see the evolving situation, the developing situation. His wisdom, his judgment, is used, not on a situation that is stationery, but one that is changing all the time'. Complexity thinking, as one of the prominent fluid epistemologies, refers to the shift from being to becoming, from existence to in-the-making (Styhre, 2007), similar to that of liquidity employed by Bauman (2000/2012). Follett (1924/2013:53) pronounced that 'In business we are always passing from one significant moment to another significant moment, and the leader's task is pre-eminently to understand the moment of passing. The leader sees one situation melting into another and has learned the mastery of that moment.' The leader should be able to grasp the essence of the flow in time and space and have the awareness that the whole is an evolving product of evolution. As mentioned above, novelty emerges as a synthesis that occurs at the critical moment of evolution. This is clearly beyond mere running a system with complicated dynamics but entails taking system plasticity for granted. Hence, 'the leader must understand the situation, must see it as a whole, must see the inter-relation of all the parts' Follett (1949/2013:52). Complexity leadership approaches asserts a leadership style that fosters interaction, interdependency and injects adaptive tension as well as acting as a catalyst to manage the entanglement between bureaucratic and emergent function of the organization.

5.CONCLUSION

Mary Parker Follett's defied ingrained approaches that had taken stationery condition for granted and made assertive arguments regarding socio-organizational issues. Given the proclivity of studies in the field of management that mainly demarcates organizational and managerial matters within the framework of determinism Follett's principles opened up new avenues on the way to unveil the nature of nonlinear dynamics in organizational settings. Without rejecting the need for utilizing quantitative means in organizational decision-making processes she had put special emphasis on the aforementioned 'things-in-the-making' (fluidity) and had drawn our attention to the fallacy of getting obsessed with the so called cause-and-effect because 'there is no result of the process but only a moment in the process… On the social level, cause and effect are ways of describing certain moments in the situation when we look at those moments apart from the total process' (Follett 1924/2013:60-61). In an era of 'big data' the amount of data generated

have become colossal as companies capture trillions of bytes of information about their customers, suppliers, and operations, and millions of networked sensors are being embedded in the physical world in devices such as mobile phones and automobiles, sensing, creating, and communicating data (Manyika, et.al., 2011). Hence, there is a strong need to become a data-savvy organization, which is capable of extracting meaning from the relevant and reliable data collected to achieve organizational ends. Knowledge emerges as individuals and social settings interact to create meaning (Marion and Uhl-Bien, 2011). Follett's conception of 'circular response' reveals that the appropriate context to be employed for analyzing data is determined in the continuous interaction between the members of the organization. In complex systems 'the agents in the system recognize the meaning of a given exchange, and adjust their own behavior as their response to that meaning within the system. As they do so the system changes: it is not the same system as it was before' (Lichtenstein and Plowman, 2009). Incorporation of complexity thinking into management facilitates our understanding of Follett's propositions about everlasting issues in management. More insight is yet to come as we delve into her oeuvre.

REFERENCES

- Anderson, P., 1999, Complexity Theory and Organization Design, *Organization Science,* Vol.1(3), 216-232.
- Bauman, Z., 2000/2012, *Liquid Modernity*, Cambridge: Polity.
- Brandenburger, A.M. and Nalebuff, B.J., 1997, *Co-opetition*, New York: Currency Doubleday.
- Chia, R., 2012, Rediscovering Becoming: Insights from an Oriental Perspective on Process Organization Studies. In Hernes T. & Maitlis S. (Eds.), *Process, Sensemaking & Organizing*, New York: Oxford University Press, 112-139.
- Child, J., 1995, Commentary on Constructive Conflict. In P.Graham (Ed.), *Mary Parker Follett Prophet of Management: A Celebration of her Writings from the 1920s*, Boston: Harvard Business School Publishing, 87-95.
- Child, J., 2013, Mary Parker Follett. In Witzel M. & Warner M. (Eds.), *The Oxford Handbook of Management Theorists*, New York: Oxford University Press, 74.93.
- Dooley, K., 1997, A complex adaptive systems of organization change, *Nonlinear Dynamics, Psychology, & Life Science,* No.1*,* 69-97.
- Follett, M.P., 1918, *The New State: Group Organization, The Solution of Popular Government*, New York: Longmans, Green and Co.
- Follett, M.P., 1924/2013, *Creative Experience*, Mansfield Centre: Martino Publishing.
- Follett, M.P., 1940/2013, The Psychology of Control. In Metcalf H.C. & Urwick L.(Eds.), *Dynamic Administration: The Collected Papers of Mary Parker Follett*, Mansfield Centre: Martino Publishing, 183-209.
- Giddens A., 1984, *The Constitution of Society*, Cambridge: Polity.
- Goldstein, J., Hazy, J.K. & Lichtenstein, B.B., 2010, *Complexity and the Nexus of Leadership: Leveraging Nonlinear Science to Create Ecologies of Innovation*, New York: Palgrave Macmillan.
- Gray, D., 2012, *The Connected Company*, California: O'Reilly.

- Hazy, J.K., Goldstein, J.A. & Lichtenstein, B.B., 2007, Complex Systems Leadership Theory: An Introduction. In J.K. Hazy, Goldstein J.A. & Lichtenstein B.B. (Eds.), *Complex Systems Leadership Theory: New Perspectives form Complexity Science on Social and Organizational Effectiveness*, Mansfield: ISCE Publishing, 1-17.
- Held, D. & McGrew, A., 2003, Globalization. In Held D. & McGrew A. (Eds.), *The Global Transformations Reader: An Introduction to the Globalization Debate*, Cambridge: Polity, 2-50.
- Hernes, T., 2014, *A process theory of organizations*, New York: Oxford University Press.
- Hitt, M.A., 1998, Twenty-first century organizations: Business firms, business schools, and the academy. *The Academy of Management Review,* Vol.23, 218-224.
- Kanter, R.M., 1995, Preface. In Graham P. (Ed.), *Mary Parker Follett Prophet of Management: A Celebration of her Writings from the 1920s*, Boston: Harvard Business School Publishing.
- Keohane, R.O. & Nye Jr., J.S., 2003, Globalization: What's New? What's Not? (And So What?). In Held D.& McGrew A. (Eds.), *The Global Transformations Reader: An Introduction to the Globalization Debate*, Cambridge: Polity, 75-83.
- Lune, H., 2010, *Understanding Organizations*, Cambridge: Polity.
- Lichtenstein, B.B., 2014, *Generative Emergence: A New Discipline of Organizational, Entrepreneurial, and Social Innovation*, New York: Oxford University Press.
- Lichtenstein, B.B. and Plowman, D.A., 2009, The leadership of emergence: A complex systems leadership theory of emergence at successive organizational levels. University of Nebraska Management Department Faculty Publications, http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1065&context=mana gementfacpub&sei-redir=1&referer
- Maguire, S., Allen, P. & McKelvey, B., 2011, Complexity and Management: Introducing the SAGE Handbook. In Maguire A.S. & McKelvey B. (Eds.), *The SAGE Handbook of Complexity and Management*, London: SAGE Publications, 2-26.
- Manyika, J., Chui, M., Brown, B., Bughin, J., Dobbs, R., Roxburgh, C. and Byers, A.H., 2011, *Big Data: The next frontier for innovation, competition and productivity*, San Francisco: McKinsey Global Institute.
- Marion, R., 1999, *The edge of organization: Chaos and complexity theories of formal social systems*, London: SAGE Publications.
- Marion, R. and Uhl-Bien, M., 2011, Complexity and Management: Introducing the SAGE Handbook. In Maguire A.S. & McKelvey B. (Eds.), *The SAGE Handbook of Complexity and Management*, London: SAGE Publications, 385-400.
- McAuley, J., Duberley, J. & Johnson, P., 2007, *Organization Theory: Challenges and Perspectives*, Edinburgh: Pearson.
- Mendenhall, M.E., Macomber, J.H. & Cutright, M., 2000, Mary Parker Follett: prophet of chaos and complexity, *Journal of Management History,* Vol.6(4), 191-204.

- Merali, Y. & Allen, P., 2011, Complexity and Systems Thinking. In Maguire A.S. & McKelvey B. (Eds.), *The SAGE Handbook of Complexity and Management*, London: SAGE Publications, 31-52.
- Morgan, G., 2006, *Images of Organization*, London: SAGE Publications.
- Pettigrew, A. M., 1990, Longitudinal Field Research on Change: Theory and Practice. *Organization Science*, Vol.1(3), 267-292.
- Plowman, D.A., Solansky, S., Beck, T.E., Baker, L., Kulkarni, M. & Travis, D.V., 2007, The role of leadership in emergent, self-organization, *The Leadership Quarterly,* Vol.18, 341-356.
- Rosenau, J.N., 2003, Governance in a new Global Order. In Held D. & McGrew A. (Eds.), *The Global Transformations Reader: An Introduction to the Globalization Debate*, Cambridge: Polity, 223-235.
- Sheldrake, J., 2003, *Management Theory*, Hampshire: Cengage Learning.
- Stacey, R.D., 2001, *Complex Responsive Processes in Organizations: Learning and Knowledge Creation*, London: Routledge.
- Styhre, A., 2007, *The Innovative Bureaucracy: Bureaucracy in an age of fluidity,* New York: Routledge.
- Tonn, J.C., 2003, *Mary P.Follett: Creating Democracy, Transforming Management*, New Haven: Yale University Press.
- Uhl-Bien, M., Marion, R. & McKelvey, B., 2007, Complexity Leadership Theory: Shifting leadership from the industrial age to the knowledge era, *The Leadership Quarterly, Vol.18*, pp. 298-318.
- Wagner, P., 2012, *Modernity: Understanding the present,* Cambridge: Polity.
- Wren, D.A. & Bedeian, A.G., 2009, *The Evolution of Management Thought*, NJ: Wiley.

BANK COMPETITION, CONCENTRATION AND RISK-TAKING IN THE TURKISH BANKING INDUSTRY

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ABSTRACT
This paper addresses the impacts of bank competition on the risk-taking behaviors of banks in Turkey over the period 2002-2012. After estimating H-statistic as a measure of competition and regressing this measure and other explanatory variables on the bank risk indicators, this paper concludes that competition has a negative impact on the financial fragility of Turkish banks, indicating that banks in a more competitive market tend to take lower level of risk. This finding supports the arguments of the "competition-stability" hypothesis in the Turkish banking system. Furthermore, bank concentration is found to be inversely related to bank risk. On the one hand, bank size, lending, liquidity, off-balance sheet activities are essential factors in explaining this relationship. On the other hand, a few instrumental variables are employed to reflect the country's overall macroeconomic condition. In general, despite the negative impact of interest rate on bank risk-taking behavior in most of the models, in which different risk measures are used as dependent variables, the result highlights the empirical evidence of no significant association between economic growth and bank risk-taking. Overall, this paper aims to provide policy implications for bank management and consolidation policies and also the role of the Central Bank.

1.INTRODUCTION

Through the liberalization of capital flows, and increasing globalization trend in the world financial system since 1980s, banking competition has been a topic of great concern for both researchers and policy makers. As a result of the liberalization process, banking markets were stimulated by foreign bank entry, merger and consolidation activities, and other type of restructuring reforms, thereby, fostering competition. A more competitive environment is expected to create more efficiency in the banking system in terms of lowering prices, and producing higher quality financial products (Boyd and Nicolo, 2005). However, the impact of competition on the stability of the banking sector remains an open question. There are two main contradictory theories explaining this issue, namely, "competition-fragility" and "competition-stability". Based on the some empirical studies, increased competition leads to greater banking risk-taking, and thereby, greater fragility in the banking sector (Chan, Greenbaum and Thakor, 1986; Furlong and Keeley, 1989; and Keeley, 1990; Carletti, 2005; Vives, 2010; Allen and Gale, 2000, 2004; Cordella and Yeyati, 2002). In contrast, other studies support that more competition results in greater, rather than less stability, and also that the frequency of crises is reduced in more competitive

banking markets (Boyd and De Nicolo, 2005; Beck et al., 2006). With the increasing deregulation and consolidation process, and also significant structural changes, especially in the developing countries, this paper aims to investigate empirically whether competition has any effect on bank risk-taking, and thereby, the financial stability of the banking sector in Turkey over the period 2002-2011. Our interest is to determine whether either "competition-fragility" or "competition-stability" theory explains the Turkish banking market, or whether both are simultaneously valid. This study focuses on Turkish banking market for several reasons. First, Turkish banking system has undergone dramatic changes from the financial liberalization process in 1980s to the severe 2000 and 2001 financial crises. Following the crisis period, some rehabilitation and restructuring programs were conducted to provide a more competitive, efficient and stable banking environment. Moreover, through the intensive regulation process after 2000s, the number of banks, employees and branches declined, resulting in a change in the competitive structure of the banking environment. Second, since the financial system in Turkey is dominated by the banking sector providing higher source of financing to private and public sectors, the stability of banking system remains an important issue for both academicians and policy makers.

In order to investigate the impact of competition on bank risk-taking, this paper employs four different risk indicators as dependent variables; loan loss provision over total loans, and loans under follow-up over total loans are used as risk indicators to account for loan risk, whereas volatility of ROA and Z-index are used to measure the overall bank risk. Competition is measured by the well-known Panzar-Rose's approach, which constructs *H-statistics.* In addition to competition, one of the main goals of this paper is to investigate whether the bank concentration has any effect on bank risk-taking behaviors of Turkish banks, and also the financial stability of the banking system over the period 2002-2011.

On the whole, this paper also enables us to examine the impact of important factors, such as size, liquidity, lending, interest rate, off-balance sheet items, on the relationship between bank competition and risk-taking. The contribution of this paper to the literature is two-fold: First, to the author's best knowledge, this is one of the pioneering studies that measure both the impact of competition on the financial stability of the banking system by including a wider perspective of risk and competition measures, in addition to some explanatory variables. This study uses both static – fixed effects and random effects-models and dynamic models. Second, it considers the 2002-2011 period, characterized as the restructuring period of Turkish banking market after 2000 and 2001 Turkish financial crises and also the recent global financial crises.

The rest of the paper is structured as follows: Section 2 provides a brief theoretical and empirical literature on the link between bank competition and financial stability. Section 3 describes the data, variables and provides descriptive statistics. Section 4 highlights the methodology used in this paper. Section 5 discusses empirical results and the final section concludes the paper.

2. LITERATURE REVIEW

There is an extensive theoretical and empirical literature exploring the relationship between competition and risk in banking. This literature review firstly discusses the

theoretical framework, and then focuses on the empirical literature on competition and bank-risk taking.

2.1. Theoretical Literature

Two main hypotheses have been proposed in the existing banking literature: the 'competition-fragility' hypothesis and the 'competition-stability' hypothesis. 'Competition-stability' hypothesis, which is also called as 'franchise value paradigm', states that increased competition among banks leads to greater banking risk-taking and thereby, greater financial fragility. This is because intense bank competition results in a reduction in market power as well as profit margin, which especially weakens the franchise value of banks[1]. Therefore, in order to cover the losses from the decline in the franchise value, banks will have greater incentives to take on more risks for profits. Initiated by Marcus (1984), one of the earliest studies in this literature, this view is theoretically modeled by Chan, Greenbaum and Thakor (1986), Furlong and Keeley (1989), and Keeley (1990). Using a state preference model with two periods, Furlong and Keeley (1989) and Keeley (1990) indicate that a decline in franchise value increases bank risk-taking. Furthermore, as in the study of Chan, Greenbaum and Thakor (1986), increased competition erodes the informational rents that the banks earn through their relationship with borrowers. This leads banks to decrease their incentives to screen potential borrowers, thereby, the credit quality of banks declines. As a general view of this hypothesis, deregulation which results in more bank entry and competition, leads to greater fragility. Consistent with the competition-fragility literature, Besanko and Thakor (1993) show that increased competition leads banks to take greater risk because of eroding the informational rents initiated from relationship banking activities. Marquez (2002) demonstrate in a framework of asymmetric information that more competition with an increase in the number of banks in a market results in dispersion in the borrower-specific information, therefore, implying a higher funding rates and greater access to credit for low-quality borrowers.

In a framework of imperfect competition, Matutes and Vives (1996, 2000) showed that if the market power of a bank increases, its default probability declines. Likewise, Hellman, Murdock and Stiglitz (2000) assert that more competition with lower bank margins can have a negative impact on prudent behavior of banks, thereby, resulting in more risk-taking. In order to overcome the enormous gambling incentives in the system, they suggested that deposit rate controls, as well as capital requirements, should be included into the regulatory instruments. These results are consistent with the findings of Repullo (2004), who found that in the absence of regulation, banks will take on greater levels of risk in a more competitive environment. Thus, risk-shifting incentives should be effectively monitored by risk-adjusted capital requirements. There are also many studies in the theoretical literature that support the view that increased competition leads to greater risk-taking, and thereby, greater financial fragility (Carletti, 2005; Vives, 2010; Allen and Gale, 2000, 2004; Cordella and Yeyati, 2002; Caminal and Matutes, 2002; Saez and Shi, 2004).

Although most previous theoretical literature above support the competition-fragility hypothesis under the assumption of competition in the deposit side of the bank balance sheet, the competition-stability hypothesis of Boyd and De Nicolo (BDN, 2005) assumes competition in both loan and deposit sides of the market. Focusing on the deposit side of

the balance sheet, it is assumed that banks can earn higher rents since they pay lower deposit rates in less competitive markets. However, in a moral hazard environment, as in Stiglitz and Weiss (1981), on the lending side of the market, banks can charge higher interest rates to borrowers in a less competitive market. The higher borrowing rates may enhance the risk-taking behavior of banks and thus, leading to an increase in the default risk of banks, and as well, a systemic crisis[2]. This view, which is also called as 'risk shifting' paradigm, generally suggests that higher levels of competition results in more, rather than less stability (Boyd and De Nicolo, 2005). More recently, Martinez-Miera and Repullo (MMR, 2010) extend the BDN model by introducing imperfect correlation across borrowing firms' default probabilities. As in the BDN model, their model also covers "risk-shifting effect", in the sense that more competition leads to lower loan rates, lower default and bankruptcy risk and lower risk-taking by banks. However, because their model allows for imperfect correlation across firms, it suggests the existence of "margin effect", which supports that lower loan rates decrease the overall bank revenues, and therefore, this would probably lead to greater bank risk-taking and bank failures. Thus, the resulting net effect between bank competition and financial stability is not clear, since these two effects work in opposite directions. Specifically, based on MMR model, the margin effect is shown to dominate the risk-shifting effect in more competitive markets, implying that more competition in a market increases bank risk-taking, and thus, results in greater financial fragility. On the other hand, the risk shifting effect is shown to dominate the margin effect in a more concentrated banking market, suggesting that increased competition leads to lower bank risk-taking and bank failure risk. Generally, in the MMR model, there is a U-shaped relationship between bank competition, measured by the number of banks, and bank failure risk.

2.2. Empirical Literature

The link between bank competition and bank risk-taking has become the subject of lively debate among academicians throughout the world over the last three decades. The empirical evidence, however, about this relationship is somewhat mixed and inconclusive. Using Tobin's *q* as a measure of degree of bank competition, Keeley (1990) was the first who found that after the financial deregulation in the US, competition in the banking industry caused a reduction in bank risk during the 1980s, which is in support of the franchise value hypothesis. In a single country setting, Demsetz, Saidenberg and Strahan (1996) show that the banks with a higher market power have higher solvency ratios and a lower level of bank risk. Using again a sample of US banking industry, Saunders and Wilson (1996), and Brewer and Saidenberg (1996), consistent results with Keeley's study (1990), find a negative relationship between franchise value and bank risk. Hellman et al. (2000) analyze the Japanese banking industry and find that increased competition in the banking environment after the financial liberalization process during 1990s results in a reduction in profitability and franchise value of domestic banks. As a result, this led to the East Asian crisis and deterioration in the Japanese banking system. In terms of country-specific literature review, for Spain, Salas and Saurina (2003) provides the empirical evidence of significant and robust relationship between bank competition and bank risk-taking, replicating the study of Keeley (1990), while Bofondi and Gobbi (2004) highlight that the increase in the number of banks in Italian banking industry deteriorates the default loan rates. Jayaratne and Strahan (1998) find that after the relaxation of branching statewide,

loan loss provisions decline in a sharp manner, thereby, decreasing bank risk. Overall, increased competition has the opposite effect of franchise value paradigm. However, Dick (2006) finds a positive and significant relationship between banking deregulation and increases in loan losses. Jimenez, Lopez and Saurina (2008) provide empirical evidence for a negative relationship between bank competition, measured as Lerner index, and risk-taking in Spanish banks. Fungacova and Weill (2009) show that an increase in bank competition is specifically associated with greater bank failures in the case of Russian banks. In addition to bank competition and risk taking relationship, the analysis of whether the reduction in the franchise value through the liberalization periods is associated with banking crisis or not is empirically studied in the previous literature (Stiglitz and Weiss (1981), Taylor (1983), Cho (1986), Fry (1988), Dornbush and Reynoso (1989), Jensen (1989) and Chan and Velasco (2001). Besides the above-mentioned studies in single-country settings, using *H*-statistics as a measure of bank competition, Levy-Yeyati and Micco (2007) analyze eight Latin American countries' banks and show that increased bank competition leads to increase in bank risk, supporting the "competition-fragility" hypothesis. Using a sample of developing countries over the period 1999-2005, Ariss (2010) reveals that even though greater bank market power leads to greater bank risk, and also stimulates the profit efficiency, the cost efficiency of banks will deteriorate.

Although there is an extensive literature supporting "franchise value" hypothesis, Boyd, De Nicolo and Jalal (2006) provide cross-country empirical evidence that supports "competition-stability" hypothesis. Using several bank measures for a US and international bank sample, they find a negative and significant relationship between bank competition, measured as Herfindahl and Hirschmann index (HHI), and bank risk-taking, namely *z*-score, suggesting that banks are exposed to greater risk of failures in more concentrated/less competitive banking environments. Additionally, taking bank ownership into consideration, De Nicolo and Loukoianova (2007) find empirical evidence on competition-stability hypothesis. In a cross-country setting, Uhde and Heimeshoff (2009) test the bank concentration effect on financial stability of European Union countries over the period 1997-2005, and conclude that market concentration has a negative effect on the financial soundness of European banks. Particularly interesting is the finding that this negative bank concentration effect is found to be more severe in the less developed countries of Eastern Europe. Using a sample of 38 countries between 1980 and 2003, Schaeck, Cihak, and Wolfe (2006) find that greater bank competition is associated with less systemic risk. In the case of eight Latin American countries, Yeyati and Micco (2007) find consistent result with the previous literature on "competition-stability". They show a negative link between bank competition and risk-taking of banks, implying that greater competition leads banks to take on less risk. Liu, Molyneux and Nguyen (2012) investigate the effects of competition on the banks of Southeast Asia, and conclude that competition does not necessarily increase bank risk-taking. Based on the analysis of 8235 banks in 23 developed countries, Berger, Klapper and Turk-Ariss (2009) shed light on both "competition-fragility" hypothesis and "competition-stability" hypothesis. Their results show that banks with a higher degree of market power have lower overall risk measures, which supports the "competition-fragility" hypothesis. However, their analysis provides evidence that supports the "competition-stability" hypothesis, indicating that greater bank market power results in an increase in non-performing loans. This risk is partially offset by higher capital ratios. Based on the analysis of Asian banking industry during the 2001-2007 period,

by considering a sample of broader set of Asian banks over the period 1994-2009, Soedarmono, Machrou and Tarazi (2013) show that the banks with higher degree of market power have correspondingly higher capital ratios, higher income volatility and higher insolvency risk. However, through the crisis period, higher market power is associated with lower bank risk-taking and insolvency risk. In a single-country setting, Jimenez, Lopez and Saurina (2013) examine the relationship between bank competition and risk-taking within the context of the Spanish banking system. The results support the original franchise value only in the loan market whereas the overall results provide empirical evidence on MMR model.

The relationship between bank competition and bank risk taking has been investigated in many studies, either on single-country or cross-country settings, across a range of developed and developing countries. However, little research has been conducted specifically on Turkey, which is one of the biggest economies in Eastern Europe and Middle East, and has extensively reformed and restructured its banking system after the severe 2001 crisis. Based on the analysis of Turkish banking system over the period 1988-2007, Tunay (2009) provides evidence in favor of the "competition-stability" hypothesis for Turkey. In line with the findings of Tunay (2009), Yaldız and Bazzana (2010) examine the link between market power and bank risk-taking in Turkey for the period of 2001-2009, finding some empirical evidence to the support the "competition-stability" hypothesis. On the other hand, the results provide insufficient evidence for the impact of market power on the risk-taking behavior of Turkish banks after the year 2000.

3. DATA

Bank level data for all banks operating in Turkey for the period 2002-2011 were obtained from the "Banks Association of Turkey". Since the period 1999-2001 can be considered as the years of crisis and the consequent transformation and restructuring, the sample period represents the period after severe economic and banking crisis in order to eliminate the impacts of these crises on the Turkish Banking System. The final sample covers annual information for a balanced panel of 280 bank-level observations covering 28 banks[3]. Of these, 3 are state-owned banks, 11 are privately-owned, 9 are foreign banks founded in Turkey, and 5 are foreign banks with branches in Turkey.

Table 1: List of Deposit Banks Used in the Study

State-Owned Deposit Banks	Foreign Banks Founded in Turkey
Türkiye Cumhuriyeti Ziraat Bankası A.Ş.	Alternatifbank A.Ş.
Türkiye Halk Bankası A.Ş.	Arap Türk Bankası A.Ş.
Türkiye Vakıflar Bankası T.A.O.	Citibank A.Ş.
	Denizbank A.Ş.
Privately-Owned Deposit Banks	Deutsche Bank A.Ş.
Adabank A.Ş.	Finans Bank A.Ş.
Akbank T.A.Ş.	HSBC Bank A.Ş.
Anadolubank A.Ş.	ING Bank A.Ş.
Fibabanka A.Ş.	Turkland Bank A.Ş.
Şekerbank T.A.Ş.	
Tekstil Bankası A.Ş.	**Foreign Banks having branches in Turkey**
Turkish Bank A.Ş.	Bank Mellat
Türk Ekonomi Bankası A.Ş.	Habib Bank Limited
Türkiye Garanti Bankası A.Ş.	JPMorgan Chase Bank N.A.
Türkiye İş Bankası A.Ş.	Société Générale (SA)
Yapı ve Kredi Bankası A.Ş.	The Royal Bank of Scotland Plc.

In order to investigate the impact of competition on risk taking behaviors of banks in Turkey, different measures of competition and bank-risk taking are used. Table 2 shows the names and descriptions of the variables used in the models. As a proxy of risk-taking, four different accounting measures[4] as dependent variables are employed in the study. First, ratio of loan-loss provisions over total loans (LLPTL), which reflects the expense for banks to account for future losses on loan defaults, is used as a measure of credit risk. A second credit risk measure is non-performing loans ratio, measured as the ratio of loans under follow up over total loans (LUFTL). In general, when loan-loss provisions and loans under follow up increase, this suggests that banks are exposed to much more risk. Even if credit risk is the primary driver of risk for most banks, banks face a number of risks to conduct their business. Third, the volatility of ROA is employed in the study as a risk component to reflect market risk. Finally, the evolution of overall bank risk is measured by Z-index, which is calculated as the ratio of the sum of ROA and equity-to-asset ratio over the volatility of ROA. Z-index has been commonly used in many studies in the banking literature to measure "*safety and soundness*" of a banking sector (Nash and Sinkey, 1997; De Nicolo, 2000; De Nicolo, Bartholomew, Zaman and Zephirin 2004; Boyd, De Nicolo and Jalal, 2006; Yeyati and Micco, 2007; Uhde and Heimeshoff, 2009; Yaldız and Bazzana, 2010; Liu, Molyneux & Nguyen, 2012; Liu and Wilson, 2012; Tabak, Fazio and Cajueiro, 2012) since it combines profitability, leverage and return volatility in one single measure (Berger et al., 2008). Z-index is positively related with the profitability and capitalization, but negatively related with unstable returns proxied by the higher standard deviation of ROA; thus, higher values of Z-index indicate lower level of overall bank risk.

As discussed previously, various measures of degree of bank concentration have been used in the literature. Three standard measures are used in our analysis, namely, Concentration 3 (C3 hereafter), Concentration 5 (C5, hereafter) ratios and Herfindahl-Hirschman Index (HHI). C3 and C5 ratios represent the concentration ratios of the biggest 3 and 5 banks with respect to the share of their assets of the banking sector. Although relatively easy to calculate, these ratios do not include the information about the remaining banks in the banking sector. Therefore, to eliminate this limitation, Herfindahl-Hirschman Index (HHI) is used as an additional measure of degree of bank concentration.
Risk-taking behavior of banks can clearly be affected by a number of bank specific and macroeconomic factors, not all of which are included in the bank competition measure. As a proxy for macroeconomic factors, therefore, real interest lending rate and economic growth are used to control for the changes in the economic environment.

Table 2: Variables Used in the Study

Variables	Description	
Bank Risk Indicators	Loans under follow-up / Total Loans	LUF/TL
	Loan-loss provisions / Total Loans	LLP/TL
	Deviation of individual bank's return on asset (ROA) from the sample mean within one period	ROA volatility
	Logarithm of Z-index (Z-index is defined as the ratio of the sum of ROA and equity-to-asset ratio over the volatility of ROA)	LNZ-index
Size	Natural Logarithm of Total Assets	LNTA
Liquidity	Liquid Assets / Total Deposits	LA/TD
Off-Balance	Off-Balance Sheet Items / Total Assets	OBS/TA
Lending	Total Loans / Total Assets	TL/TA
Interest Rate	Real Interest Lending Rate	i
Economic growth	Logarithm of growth in Gross Domestic Product	LNGDPG
Concentration Indices		
Concentration - 3	Ratio of three largest bank's over total banking sector assets	C3
Concentration - 5	Ratio of five largest bank's assets over total banking sector assets	C5
Herfindahl–Hirschman Index for Assets	Sum of squared market shares (measured in fractions of the total bank assets) of all banks in the industry	HHI-Assets

The study considers the use of certain bank-level explanatory variables, such as size, liquidity, off-balance sheet items, and lending, in order to determine whether they have an impact of banking sector risk. Table 3 presents the descriptive statistics for the variables used in the study.

From this table, the average LUFTL ratio is 19.8% with a large degree of dispersion across banks, ranging from 0% to 27%. A similar outcome holds for the LLPTL ratio, with an average of 14% and a large dispersion from 0% to 37%. ROA volatility has an average of 0.4%, however, the dispersion is not as wide as the other risk measures. For the latest measure, Z-index does not display a wide variation for Turkish banks over time (-0.29 to 9.62). The market share of the first three and five commercial banks, denoted as C3 and C5, has an average of 42.1% and 61.5%, and the value HHI for assets does not exceed 1000, indicating that the Turkish banking sector could be described as almost non-concentrated over the period 2002-2012. The average annual value of TLTA ratio is 41.9%, with a high degree of variation, ranging from 0% to above 84%. Additionally, as evidence of bank size, the natural logarithm of banks' total assets ranges from 9.71 to 18.40, thus reflecting a widely dispersed distribution of this variable.

Table 3: Descriptive Statistics

Variables	*Mean*	*Median*	*Std. Dev.*	*Maximum*	*Minimum*
LUF/TL	0.198	0.024	2.336	37.591	0.000
LLP/TL	0.140	0.017	1.737	27.970	0.004
ROA volatility	0.004	0.002	0.009	0.117	0.000
LNZ-index	4.550	4.379	1.309	9.627	-0.290
LNTA	14.733	14.679	2.115	18.404	9.718
LA/TD	17.619	0.584	35.282	281.490	0.083
OBS/TA	2.989	1.906	3.273	27.602	0.018
TL/TA	0.419	0.440	0.203	0.847	0.003
I	25.088	22.256	11.864	53.879	14.186
LNGDPG	4.657	4.665	0.041	4.695	4.556
C3	0.421	0.422	0.015	0.456	0.404
C5	0.615	0.619	0.015	0.630	0.584
HHI-Assets	0.095	0.095	0.003	0.099	0.088

Note: LUFTL is the ratio of loans under follow-up over total loans. LLPTL is the ratio of loan-loss provisions over total loans. *ROA* volatility *is* the deviation of individual bank's return on asset (ROA) from the sample mean within one period. *Z-index* is the ratio of the sum of ROA and equity-to-asset ratio over the volatility of ROA. LNTA is the natural logarithm of total asset of bank as a measure of bank size; *LA/TD is* the ratio of liquid asset over total deposit as a measure of liquidity; *TL/TA* is the ratio of total loan over total asset of bank as a measure of lending; *OBS/TA is* the ratio of off-balance sheet items over total assets as a measure of off-balance sheet activity; i represents real interest lending rate in Turkish economy ; LNGDPG represents the natural logarithm of real GDP growth rate of Turkish economy; C3 denotes the share of the 3 largest banks in the country; C5 denotes the share of the 5 largest banks; HHI-assets is the Herfindahl Index of concentration based on total assets.

With respect to LATD ratio, the average value for liquidity measure is 17.61 and there is a significant difference in degree of the liquidity that banks hold over the sample period as some banks hold higher levels of liquid assets (as high as 281.40), while others almost none.

4. METHODOLOGY

To examine the relationship between competition and risk-taking, the model to be estimated includes variables from various studies on risk, competition and capital regulation, and size in banking (De Bandt and Davis, 2000; De Nicolo, 2000; Bikker and Haaf, 2002; Claessens and Leaven, 2004; Demirgünç-Kunt *et al*., 2004; Gelos and Roldos, 2004; Gonzalez, 2005; Beck *et al.,* 2006; Casu and Girardone, 2006; Wagner, 2007; Altunbas *et al.,* 2007; Carbo *et al*., 2009; Uhde and Heimeshoff, 2009; Yaldız and Bazzana, 2010; Liu *et al.,* 2012; Liu and Wilson, 2012; Tabak et al., 2012; Jimenez *et al.,* 2013). The general empirical model to be estimated is as follows:

$Risk_{i,t}f(Competition_t, bank\ control\ variables_{i,t}, macroeconomic\ variables_t$
(1)

where the *i* subscript refers to a bank and *t* subscript refers to a sample year. The model sets the relationship between bank risk measure and competition, controlling for bank specific characteristics and macroeconomic variables.

Under static relationship, the studies in the literature usually apply fixed effects and random effects models. However, taking the dynamic relationship consideration, these two methods will produce biased results and inconsistent estimates (see Baltagi, 2001). Therefore, as a dynamic panel data analysis, Generalized Methods of Moments (GMM) suggested by Arellano and Bond (1991) is also applied. GMM proposed by Arellano and Bond (1991) controls the potential endogenous explanatory variables and eliminates the time-invariant firm-specific effect by differentiating the regression equation. Additionally, by employing two or more lagged values of the explanatory variables as instruments, Arellano and Bond (1991) first difference GMM estimator is able to solve the correlation problem between the new error term and the lagged dependent variable.

The econometric analysis adopted in this study involves four steps. Before proceeding to the identification of a possible relationship, all variables need to be tested for stationarity to determine the order of integration. If the order of integration is zero, the series is considered to be stationary, and hence, there is no unit rot. This study uses reliable and well-behaved panel unit root tests, such as those developed by Levin, Lin and Chu (LLC, 2002) and Im, Pesaran and Shin (IPS, 2003), which avoid the problems associated with the traditional unit root test applied to individual time series data. LLC and IPS are based on the null of a unit root. After the presence of unit root is detected in the variables, then, it is to check whether individual effects are fixed or random. As a further step to deal with biasedness and inconsistency of the estimates, GMM dynamic panel estimation technique is used. Finally, some diagnostic tests are provided to check for the robustness of the estimates.

The IPS (2003) test, which allows for heterogeneity across different panel members, includes different sets of traditional Augmented Dickey Fuller (ADF) regressions[5]. The IPS (2003) test can be specified as follows:

$$\Delta y_{i,t} = \alpha_i + \beta_i y_{i,t-1} + \sum_{j=1}^{pi} \rho_{i,j} \Delta y_{i,t-j} + \varepsilon_{i,t} \qquad (2)$$

Where $i = 1, \dots \dots, N$ and $t = 1, \dots \dots, N$

The error terms are assumed to be independently and normally distributed with zero means, and potentially finite heterogenous variances for all banks and years, whereas lag order (ρ) and β_i's are allowed to across banks. The IPS t-statistic is the simple average of the individual Dickey Fuller (DF) unit root tests. The IPS test differs from LLC in the sense that all series in the alternative hypothesis of LLC are in the stationary processes, whereas some series can still be non-stationary in the alternative hypothesis of IPS.

In the context of static panel data regression, the general model to be estimated is of the following form:

The actual model specification is as follows:

$$Risk_{i,t} = \alpha + \beta_1 Competition_t + \beta_2 Liquidity_{i,t} + \beta_3 Size_{i,t} + \beta_4 Lending_{i,t} + \beta_5 Off\text{-}Balance_{i,t} + \beta_6 Concentration_t + \beta_6 Economic\ growth_t + \beta_7 Interest\ rate_t + \varepsilon_{i,t} \qquad \varepsilon_{i,t} = v_i + u_{i,t} \qquad (3)$$

The dependent bank risk variable, $Risk_{i,t}$ include the risk indicators, $Competition$ is the bank competition, $Liquidity$, $Size$, $Lending$, $Off\text{-}Balance$ and $Concentration$ are the bank-specific characteristics and $Economic\ growth_t$ and $Interest\ rate_t$ are the macroeconomic variables to control the business cycle conditions. As a one-way error component, $\varepsilon_{i,t}$ is the disturbance term, with v_i the unobserved bank-specific effect, and $u_{i,t}$ the idiosyncratic error, where $v_i \sim IIN(0, \sigma_v^2)$ and independent of $u_{i,t} \sim IIN(0, \sigma_u^2)$. Under the fixed effects model, the v_i's are assumed to be fixed parameters to be estimated, whereas v_i's are assumed to be drawn randomly from a large population. The appropriate model that best fits the sample and the objective of the research must be selected based on the Hausman test. Regarding the main assumption of the random effects estimation, the random effects are not correlated with the explanatory variables. Under the null hypothesis of no correlation between individual effects and regressors, the rejection of null hypothesis supports the random effect to fail, whereas the acceptance of the null makes the random effects estimator the most appropriate choice (Baltagi, 2001). However, since there may be a problem of endogeneity between risk indicators and the explanatory variables, the conventional panel data models may produce biased parameters. Therefore, in order to address these problem estimations, Arellano and Bond (1991) proposed a dynamic Generalized Method of Moments (GMM) estimator model, known as difference GMM, which uses all lagged values of the dependent variable[6]. The dynamic panel GMM model is helpful in amending the potential bias induced by omitted variables in cross-sectional estimates and inconsistency caused by endogeneity. This study adopts the dynamic panel GMM approach to estimate the parameters in first difference form using GMM estimation techniques. To control for endogeneity, the difference GMM estimator adds lagged levels of endogenous regressors, in addition to using the exogenous

variables as instruments. The validity of the results of the dynamic GMM panel estimator developed by Arellano and Bond (1991) are confirmed by the two specification tests, Sargan test (or Hansen test) and second-order serial correlation test. Sargan test of over-identifying restrictions is designed to test the overall validity of the instruments, and second- order serial correlation test hypothesizes that the error term is not serially correlated (Arellano and Bond, 1991; Arellano and Bover, 1995; Blundell and Bond, 1998). Because first difference is taken, first-order autocorrelation, and no second-order autocorrelation in the residuals should be observed. In general, the failure to reject the null hypothesis of these two specification tests supports the validity of the GMM estimates.

Four bank risk indicators are employed alternatively to measure the risk taking behavior of banks in the Turkish banking sector, namely, ratio of loan-loss provisions over total loans (LLPTL), non-performing loans ratio, measured as the ratio of loans under follow up over total loans (LUFTL), ROA volatility, and Z-index. $Competition_t$ is measured by H-statistics. $Liquidity_{i,t}$, which is included into the model as bank-specific control variables, is computed from the ratio of total liquid assets over total deposits. It may be expected that relatively more liquid banks are less risky, since liquid assets are a buffer against liquidity shocks (Liu *et al.,* 2012; Köhler, 2012). However, Wagner (2007) suggests that the opposite is in fact the case. $Size_{i,t}$ is the natural logarithm of total assets. One would expect that larger banks encounter less risk because they are able to better diversify the risks than smaller banks (Berger, 1995; Demsetz and Strahan, 1997; Stiroh, 2006). Additionally, larger banks may have much greater awareness about the risk management systems and instruments compared to smaller banks, and thus, tend to be more stable. However, this is not necessarily the case. On the contrary, larger banks may take on higher levels of risk (De Nicolo, 2000), since they may operate under more competitive pressures (De Bandt and Davis, 2000), and/or they may expect to access to government safety-net measures, which are used to bail out large, distressed banks (O'Hara and Shaw, 1990). As a bank-specific control variable, $lending_{i,t}$, measured as the ratio of total loans over total asset, is included into model to control for the lending behavior of banks. The literature consistently finds that excessive lending activity is associated with greater risk-taking (Altunbas *et al*., 2007; Jimenez and Saurina, 2007; Foos *et al*., 2010)[7], whereas if the ratio of loans over total assets is low, profits will fall, meaning that the banks may be exposed to profitability risks (Liu and Wilson, 2012). Consequently, the impact of lending activity on the bank risks is not clear. Other bank-level explanatory variable of the risk-taking is the $Off\text{-}Balance_{i,t}$ is calculated as the ratio of off-balance sheet items over total assets. Mixed results have been found for the relationship between off-balance sheet items and risk-taking. While Stiroh (2004) and Liu *et al*. (2012) find that off-balance sheet items are expected to be positively related to risk due to the creation of volatile income, Angbazo (1997) argue that off-balance sheet activities shows evidence of negative impact on bank's riskiness since these activities can help banks to diversify their revenue streams. $Concentration_t$ is captured by the ratio of three and five largest banks's assets over the total assets of the banking system, and is used to examine whether concentration has an impact on bank risks (Beck et al., 2006; Uhde and Heimeshoff, 2009, Berger et al., 2009; Liu et al., 2012).

Meanwhile, when investigating the impact of bank competition on risk-taking behavior of banks, and hence systemic stability, it is vital to control for macroeconomic factors that are likely to affect both market structure and financial stability.Therefore, $Economic\ growth_t$ and $Interest\ rate_t$ as country-specific macroeconomic variables are included into all regression models. $Economic\ growth$, which is proxied by the growth of real gross domestic product, is employed to control for business cycle conditions, since the banks' activities and operations may be correlated with business cycles (Laven and Majoni, 2003). Bank risk levels are expected to be lower in the economic expansion periods since unemployment rate and insolvency rates should be lower. This will result in a decrease in credit risk and bank portfolio risk (Köhler, 2012). Additionally, during economic expansions, the number of new projects is expected to increase and the projects to be much more profitable in terms of net present value. Therefore, this may reduce the overall credit risk of the bank further (Kashyap et al., 1993). Additionally, a negative effect of growth in GDP on bank risks is expected, since problem loans should increase during economic recession periods (Jimenez *et al.,* 2013). However, banks may encounter more risks during expansion periods if they decide to reduce their screening activity and lending standards (Ruckes, 2004). Finally, $Interest\ rate_t$, as a proxy of lending rate, is included to assess whether interest rates within the countries affect the risk taking of banks. Beck *et al*., 2006 and Liu *et al.,* 2012 have indicated that, in countries with a higher real interest rate, banks tend to face lower risk due to the associated lower levels of inflation. Lower inflation reduces the overall risk in an environment. Moreover, higher interest rates results in a decline in the lending activity of the banks. As discussed previously, higher lending activity is associated with higher or lower bank risks.

4.1. Measuring Bank Competition

Many early studies on bank competition are classified into one of two schools, the "structural" and "non-structural" approaches. Structural approaches are carried out the form of "*Structure-Conduct-Performance (SCP)*" and "*Efficient-Structure-Hypothesis*" and both of which focus on profitability while measuring market power. However, due to the empirical and theoretical deficiencies of these two structural approaches, a nonstructural approach has been developed within the framework of "New Empirical Industrial Organization (NEIO) Models. These models give importance to the deviations of output price from marginal cost, and therefore, measure the impact of monopoly and oligopoly powers.

Among these, the Panzar-Rosse (1987) model is one of the most well-known nonstructural techniques to measure bank competition and derived from profit maximizing equilibrium conditions. The Panzar-Rosse model requires the estimation of a reduced form revenue function. Based on P-R model, the *H*-statistics is calculated from the reduced form revenue equation, and is equal to the sum of elasticities of bank revenue with respect to the input prices. In this study, the *H*-statistics is calculated for a pooled bank sample using the revenue equation by using pooled Ordinary Least Squares[8], as shown in Equation 1:

$$\ln(r_{i,t}) = c + \alpha_1 \ln(p_{1,i,t}) + \alpha_2 \ln(p_{2,i,t}) + \alpha_3 \ln(p_{3,i,t}) + \alpha_4 \ln(b_{1,i,t}) + \alpha_5 \ln(b_{2,i,t}) + \alpha_6 \ln(b_{3,i,t}) + \varepsilon_{i,t} \qquad (4)$$

where $\ln$ denotes the natural logarithm; $r_{i,t}$ the ratio of revenue over total assets for bank i and year t as a proxy for output price of loans; $p_{1,i,t}$ the ratio of interest expenses over total deposits as a proxy for input price of deposits; $p_{2,i,t}$ the ratio of personal expenses over total assets as a proxy for input price of staff; $p_{3,i,t}$ the ratio of other operating expenses over total assets as a proxy for input price of bank physical capital; $b_{1,i,t}$ the ratio of equity over total assets; $b_{2,i,t}$ the ratio of total loans over total assets; $b_{3,i,t}$ total assets. θ_1 to θ_6 are the coefficients, c is constant, and $\varepsilon_{i,t}$ is the error term. The former three independent variables represent the price factors of bank inputs, whereas the latter three are the control variables, which accounts for size and risk characteristics of banks. The *H*-statistics equals $(\alpha_1 + \alpha_2 + \alpha_3)$. A negative value of *H* indicates that a banking firm is operating in monopolistic market, whereas $H = 0$ suggests that input prices are not correlated with industry returns (Shaffer, 1982). The banking market is perfectly competitive when *H* is equal to one. The *H*-statistics is positive and less than one in the case of monopolistic competition, namely, firms' revenue increases but by a smaller proportion than firms' costs when input prices increase (Goddard and Wilson, 2009).

5. EMPIRICAL RESULTS

5.1. Panel Unit Root Tests

Before proceeding to the identification of the possible relationships among the variables, several unit root tests have been proposed to verify that all variables are integrated of the same order. This study uses more reliable and well-behaved panel unit root tests developed by Levin, Lin and Chu (LLC, 2002) and Im, Pesaran and Shin (IPS, 2003). These two tests are based on the null hypothesis of a unit root. The panel unit root test with and without trend results reported in Table 4 clearly indicate that the null hypothesis of a unit root can be rejected by both tests for all variables, except off-balance sheet to total assets ratio. Therefore, it is noted that these variables are stationary in levels.

Table 4: Panel Unit Root Test

	Levin, Lin, Chu (LLC) Unit Root Test		Im Pesaran and Shin (IPS) Unit Root Test	
	No Trend	**Trend**	**No Trend**	**Trend**
LUF/TL	-13.080*	-12.988*	-5.481*	-1.878**
LLP/TL	-25.300*	-17.152*	-9.153*	-5.041*
ROA volatility	-10.175*	-13.475*	-4.967*	-3.159*
LNZ-index	-40.134*	-35.597*	-10.219*	-5.365*
LNTA	-12.956*	-19.713*	-4.210*	-0.616
LA/TD	-11.616*	-9.891*	-4.614*	-1.605***
OBS/TA	-1.350***	-7.088*	0.712	-0.355
TL/TA	-846.153*	-1655.78*	-198.803*	-121.569*
I	-24.127*	-49.152*	-13.238*	-12.044*
LNGDPG	-6.935*	-6.111*	-2.271*	-0.443
C3	-5.984*	-10.620*	-4.901*	-1.532***
C5	-10.074*	-6.729*	-4.869*	1.244
HHI-Assets	-14.628*	-9.505*	-9.848*	-0.599

*, ** and *** denote significance at 0.1, 0.05 and 0.01 levels, respectively.

5.2. Bank Competition-Risk Analysis

Appendix 1 reports regression results assessing the impact of competition on systemic stability as measured by the Z-index. Appendix 2-4 presents further empirical results from regressing bank competition and concentration on different bank-risk measures, namely, ROA volatility, LLPTL and LUFTL, respectively. Z-index is the ratio of the sum of ROA and equity-to-asset ratio over the volatility of ROA. ROA volatility is the deviation of individual bank's return on asset (ROA) from the sample mean within one period. LLPTL is the ratio of loan-loss provisions over total loans. LUFTL is the ratio of loans under follow-up over total loans. LNTA is the natural logarithm of total asset of bank as a measure of bank size; LA/TD is the ratio of liquid asset over total deposit as a measure of liquidity; TL/TA is the ratio of total loan over total asset of a bank as a measure of lending; OBS/TA is the ratio of off-balance sheet items over total assets as a measure of off-balance sheet activity; i represents real interest lending rate in Turkish economy ; LNGDPG represents the natural logarithm of real GDP growth rate of Turkish economy; C3 denotes the share of the 3 largest banks in the country; C5 denotes the share of the 5 largest banks; HHI-assets is the Herfindahl Index of concentration based on total assets; H-statistics is the measure of bank competition. Model I, II, and III are based on the C3, C5 and HHI-Assets as a proxy for bank concentration, respectively, while Model IV is based H-statistics as a proxy for bank competition. All the appendixes summarize the results of the static and dynamic models, provided in the appendix 1-4. Under the static models, fixed effects and random effects models are estimated to investigate the impact of bank competition, as well as other bank-specific and macroeconomic variables on bank risk-taking. Considering dynamic models, one specification of the GMM method proposed by Arellano and Bond (1991) is used. Among static models, the appropriate methodology is determined through the use

of specification tests, such as F-test and Hausman test. The significant *F-test* for all four tables (Appendix 1-4), which specifically sets different dependent variables in regression models, indicates that the fixed effects model outperforms the pooled OLS. Additionally, the Hausman test resulted in a significant Chi-square statistic for all regressions indicate that the fixed effects models are more superior to the random effects models. For model IV in Appendix 1, where Z-index, used as the dependent variable, measures the safety and soundness of the banking system, it was found that bank competition, measured by the H-statistics, does not induce incentives for banks to take on more risk, since the coefficient is positive and statistically significant at 5% level. This result supports "competition-stability hypothesis", indicating that increased competition leads to lower bank risk, and increases banks' financial soundness. However, considering the results of the model IV in other fixed effects models of Appendix 2-4, in which ROA volatility, LLPTL, LUFTL are used as the dependent variables, respectively, the coefficient is not found to be statistically significant in the explanation of bank risk- taking. Random effects estimations of the Model IV in Appendix 1, where Z-index is the dependent variable, provide further evidence for the positive impact of the competition on financial stability at 5% significance level, whereas in Appendix 2, with the inclusion of ROA volatility into regression as the dependent variable, bank competition is found to be negative and statistically significant at 5% level on bank risk-taking. On the whole, both random effect estimators correspond to the "competition and stability" hypothesis, suggesting that greater levels of competition lead to lower risk-taking by banks. These findings concur with the results of Jayaratne and Strahan (1998), De Nicolo (2000), Boyd *et al.* (2006), Yegati and Micco (2007) and Koetter and Poghosyan (2009), Schaeck et al. (2009) and Liu et al. (2012), but are inconsistent with the those reported by Rhoades and Rutz (1982), Keeley (1990) and Dick (2006). It is noted that specific evidence supporting the "competition-stability hypothesis" is found in Turkish banking system.

With regards to the impact of bank concentration on bank risk-taking, this study controls for the robustness of the main findings through the definition of different concentration measures. C3 and C5, as the biggest 3 and 5 banks in the banking sector with respect to the share of their assets, enter into regression results of Model I and Model II, respectively, and also HHI as the additional measure of the degree of bank concentration enters into the results of Model III in all tables in the appendixes. Considering the results of the fixed effects estimations, all these concentration measures enter regressions significantly negative at most 10% level in Appendix 3 and 4, where LLPTL and LUFTL are used as dependent variables. These results suggest that an increase in banking market concentration has a negative impact on risk-taking of Turkish banks, a result which corresponds to the "concentration-stability hypothesis" in theoretical literature, and also confirms earlier empirical findings by Beck et al., (2006a, b), Liu *et al*., (2012), but inconsistent with the result of De Nicolo *et al.* (2004) and Uhde and Heimeshoff (2009). Advocates of "concentration-stability hypothesis" suggest that larger banks operating in a more concentrated banking system can increase profits, and therefore reduce financial fragility by providing banks with higher "capital buffers", which protect them against several macroeconomic and financial shocks (Boyd et al., 2004), However, for the other bank risk measures, the coefficient is not statistically significant.

Based on random effects estimators, in contrast, only C5 enters the regression significantly negative at the 5% level in Appendix 3 and 4, considering the LLPTL and LUFTL as the dependent variables. Interestingly, using ROA volatility as the dependent variables, C5 and HHI measures enter the regression significantly positive at 5% level, promoting the "concentration-fragility hypothesis". Under the GMM dynamic technique, similarly, the positive and significant coefficient estimates of C3, C5 and HHI concentration measures regarding LLPTL and LUFTL as the dependent variables reveals that as the concentration increases in the banking system, banks are more likely to take higher risks. In consistent with these findings, all three concentration measures enter the regression significantly positive at 5% level in Appendix 1, where Z-index is used as the dependent variable. This result generally supports the theoretical arguments of the "concentration-stability hypothesis". On the whole, from an empirical standpoint in concentration and risk-taking part, employing both static and dynamic panel data estimation models, these finding accept both "concentration-stability hypothesis" and "concentration-fragility hypothesis" for Turkish banks. These results are in line with those of Berger et al. (2009) and Tabak et al. (2012). Berger et al. (2009), who test the existence of these hypotheses in 30 developed countries' banking sectors, state that evidence that supports one of the hypotheses does not necessarily invalidate the other.

For the bank characteristics, bank size enters the regression significantly negative in both static and dynamic models in all regressions with different risk measures, except Z-index. As expected, this variable enters the regression significantly positive at the 5% level, which supports the results of the other risk measures. The reason behind this is that even if the three indicators, i.e. ROA volatility, LLPTL, LUFTL are risk measures, Z-index is considered as an inverse measure of risk. These findings suggest that larger banks are less likely to be involved in risky activities compared to small banks. A possible reason is that larger banks may benefit benefit more via economies of scale or risk reduction activities through portfolio diversification (Liang and Rhoades, 1998; Demsetz and Strahan, 1997; Shiers, 2002). Additionally, superior managerial ability at larger banks plays a crucial role in eliminating risky activities. Therefore, these banks do not need to engage in high-risk activities when the environment is more competitive. This result is in line with those of Hughes et al., 2001; Altunbas et al., 2007; Liu et al., 2012; Tabak et al., 2012; Jimenez et al., 2013; whereas it is inconsistent with those of De Bandt and Davis, 2000, De Nicolo, 2000, who state that larger banks are more likely to be exposed to competitive pressures, and also higher levels of risk.

As for the effect of bank liquidity on overall risk levels of banks, static and dynamic models give different results. Using LLPTL and LUFTL risk measures as dependent variables, liquidity variable enters the regression significantly positive at 1% level in both fixed and random effects estimators, but significantly negative at 1% and 5% levels in dynamic GMM models. Despite this seemingly contradictory result, this variable is found to be statistically significant and negative at 1% levels for all models in static and dynamic estimators in Appendix 2, where ROA volatility is used. A similar outcome holds for the Z-index measure in Appendix 1. The positive and statistically significant coefficient estimates of bank liquidity in both static and dynamic estimators in Appendix 1, revealing that increased liquidity of bank assets increases banking stability. This is because highly liquid banks are expected to benefit directly from stability by encouraging banks to decrease on-

balance sheet risks, and also by their capacity to easily liquidate assets in a crisis period. This result does not support the findings of Wagner (2007), Altunbas et al. (2007) and Liu et al. (2012).

With regards to other control variables, lending is expected to have a crucial effect on risk-taking, therefore, the motive for adding this variable is to take into account bank lending behavior. Surprisingly, bank lending enters the regression significantly negative in most of the models of different estimators in Appendix 2-4, which means that since loan growth is inevitably associated with loan loss reserve levels, banks tend to take on lower level of risk. Concerning Z-index as the dependent variable, the significant and positive coefficient estimates of bank lending variable is not unexpected, banks with higher volumes of loans are less likely to be engaged in risk activities, since a high level of lending may in fact allow banks to be less aggressive in the market due to their expected higher levels of loan-loss reserves. Therefore, the overall stability may be positively impacted. These findings support the results of Altunbas et al., 2007 and Liu et al., 2012. The insignificant coefficient estimate of off-balance sheet variable in most of the regressions in all tables implies this variable does not indicate a significant impact on bank risk taking behaviors.

Regarding the macroeconomic variables, GDP growth rate fails to enter the regressions significantly in any of the models of fixed and random effects estimators in Appendix 1-4. However, under dynamic GMM model, the GDP growth rate is negative and significant at 1% level, while it is always significant but positive at 1% level in Appendix 1 and 3, based on LLPTL and Z-index risk measures, respectively. The regression results indicate that banks in a more developed economy tend to face lower level of risk, and therefore, exhibit higher levels of financial stability. This finding is in line with the findings of Kashyap et al., (1993), Beck et al. (2006), Uhde and Heimeshoff (2009) and Jimenez et al. (2013). As a motive for capturing both banks' profitability and reflect overall macroeconomic condition, the sign of the coefficient estimate of deposit interest rate is controversial in static and dynamic estimators. The interest rate is found to be significantly negative at 1 % and 5% levels in all regressions of the fixed effects models, whereas significant but not an explicit sign in random effect and dynamic GMM models based on the all-risk measures except Z-index. However, using Z-index as dependent variable, interest rate fails to enter all regressions significantly, indicating no significant impact on bank risk- taking behavior.

5.3. Robustness Checks

This section provides some commonly used diagnostic tests to evaluate whether the data are consistent with the assumptions of the static and dynamic panel data models. Following the stationarity tests of the panel data, several specification tests are employed to determine the choice of appropriate methodology. Among the static models, the F-test indicates whether fixed effects model outperforms the pooled OLS, and Hausman test determines that the fixed effects model is superior to random effects model. As indicated by the F-test, the relevant F-statistic is statistically significant at 1% level in all tables in appendixes, Appendix 1, 2, 3 and 4, indicating that fixed effects model is chosen over pooled OLS. Furthermore, the Hausman test, resulted in a statistically significant level in all tables, provides evidence in favor of fixed effects model. The overall estimation results suggest that individual effects are present. Regarding the dynamic panel GMM model, the

validity of the instruments for our specification is satisfactory in all cases, as shown by Hansen test and second-order autocorrelation test. The last two rows in all appendixes, Appendix 1, 2, 3 and 4 represent the Hansen test (or Sargan test) and AR(2) test results. Hansen test, which examines the overall validity of the instruments, assesses the null hypothesis that the over-identifying restrictions are valid. The p-values of Hansen test reported are used to test the null hypothesis. The AR(2), a second-order serial correlation test, examines the null hypothesis that first-differenced error term is not serially correlated. Hansen test (or Sargan test) statistics for all models in all tables in appendixes are found to be statistically insignificant, suggesting that over-identifying restrictions are valid. Moreover, as expected, in the residuals, there is a significant first-order serial autocorrelation, but no significant second-order autocorrelation.

6. CONCLUSION

The purpose of this paper is to determine the impact of competition on bank risk-taking behavior of banks, and also whether bank competition and concentration improves or deteriorates bank stability in Turkey over the period 2002-2011. Although there have been articles concerning this issue in many developed and developing countries, there is a very limited literature on competition and bank risk- taking in Turkey, as one of the emerging countries. Among many measures of bank concentration, using concentration ratio of the three and five largest banks, denoted as C3 and C5, and the Herfindhal-Hirschman index, Turkish banking sector is characterized as non-concentrated. This may be because relatively low total number of banks over the estimation period, due to acquisitions, mergers with foreign banks and liquidation of some banks. Next, Panzar-Rose model is employed to estimate the competitive conditions in Turkish banking industry. The H-statistics computed for the full sample over the period is 0.5353[9], indicating that Turkish commercial banks essentially operate under monopolistic competition. This finding is in line with the estimates of the competitiveness of commercial banks in Turkey by Aktan and Masood (2010), Özcan (2012) and Vardar et al. (2014). As dependent variables, four different risk-taking measures, namely loan loss provision to total loans ratio, ratio of loan-loss provisions over total loans, ROA volatility and Z-index, are employed in both static and dynamic GMM models to estimate the impact of competition on risk-taking behavior of banks. Moreover, in order to evaluate how this relationship changes according to bank-specific and macroeconomic characteristics, the analysis indicates some control variables, such as bank size, liquidity, off-balance sheet, lending, interest rate and growth rate.

Empirical results from panel estimations hold when employing alternative concentration measures, applying variable techniques to get more robust results. The results of both static and dynamic panel data estimation techniques are consistent with the "competition-stability" hypothesis, implying that banks facing high competition take on lower risks than banks experiencing average competition. They confirm empirical findings by Boyd and De Nicolo (2005), Schaeck et al. (2006) and Beck et al. (2006).

With regard to banking market concentration on bank risk-taking behavior, the results show that, in general, bank concentration is negatively correlated to bank risk taking, suggesting that banks in more concentrated markets are less vulnerable to risks. These findings support "concentration-stability" hypothesis and are in line with the findings of

the empirical studies by Schaeck and Cihak (2007), Schaek et al. (2006) and Beck et al. (2006a, b). There is clear evidence that in a competitive environment, larger banks face to lower levels of risk than smaller banks. This may be because the scale of larger banks provides a competitive advantage over smaller banks, therefore, reducing the need to take on more risk (Tabak et al., 2012). Even if off-balance sheet does not have an explanatory power on bank risk-taking in all models and estimators in Turkish banking sector, the findings for liquidity are controversial. However, in general, it can be inferred that as liquidity increases, banks are less likely to engage in risky activities. An explanation for this finding is the expectation that highly liquid banks will benefit from stability through decreasing on-balance sheet activities, and also the ability to liquidate the assets easily and quickly in a crisis period. In correspondence to empirical findings (Altunbas et al., 2007; Liu et al., 2012), lending activity displays some evidence of negative impact on bank riskiness, suggesting that as banks provide higher volumes of loans, they tend to be engaged in less risky activities, due to reflections of higher levels of loan-loss reserves. As a proxy for macroeconomic environment, GDP growth rate has a significant and negative impact on bank risk-taking behavior. An explanation for this finding is that banks in more developed economies tend to take on lower levels of risk, and therefore, exhibit higher levels of financial stability and soundness. However, there is some little evidence supporting the idea that higher interest rates discourages banks from engaging in risky activities, since a higher deposit rate actually increases bank interest income. To sum up, for the banking system as a whole, the main finding is that competition does not increase bank-risk taking, and the results are robust in different model specifications and estimations. The findings are in line with the arguments of the "competition-stability" hypothesis, and confirm empirical findings on Turkish banking by Tunay (2009) and Yaldız and Bazzana (2010).

By addressing a gap in the Turkish banking literature by employing different model specifications and estimation techniques, some policy implications can be deduced from the empirical results of this study. First, low levels of competition and concentration in the Turkish banking sector bring some limitations and disadvantages, such as reduced contributions to the financing of the real economy, and the unfair allocation of credits. These limitations are crucial, especially in Turkey, which is an emerging economy and is exposed to systemic bank failures. Therefore, competition should be encouraged in Turkish banking sector. Additionally, since higher competition leads to a reduction in bank risk taking behavior and to greater stability, competition policies again should be considered as a policy action by the government in order to strengthen the stability of the banking system. The entry restrictions should be revised for smaller banks to promote a more efficient and competitive banking system. In addition, to ensure the continuation of a more competitive system, monitoring and supervising systems should be put in place.

ENDNOTES
1. Franchise value is the present value of all expected profits that the company would like to realize. It is also referred to 'charter value'.
2. Wagner (2010) contradicts the results of Boyd and Nicolo (2005) in the sense that if it is assumed that banks can choose among different types of borrowers, in a more competitive market, banks are willing to invest in more risky projects in order to maintain their optimal risk-taking level.

3. See for Table 1 for the list of deposit banks used in the study.
4. Bongini et al. (2002) and Laeven (2006) specify the limitations of using accounting measures of bank risk and focus on the other types of risk measures. However, due to the limited number of listed banks in Turkey, it is not robust to use the other approaches mentioned in their studies. Therefore, we have to follow the same methods as the most of the previous studies in the literature.
5. Traditional ADF test is used to test for the presence of unit roots in univariate time series data.
6. Generally, Arellano and Bond (1991) propose one-step and two-step estimator for the differenced GMM. In this paper, two-step GMM estimator is used since the two-step estimator is asymptotically more efficient than one-step estimator based on the easing the independence and homoscedasticity assumptions of the first-step, by constructing a consistent estimate of the variance and covariance matrix from the residuals of the first step (Beck and Levine, 2004).
7. Banks raise lending activity by relaxing collateral requirements and/or lowering lending standards, such as granting loans to the customers who have not been given a loan by other banks due to their low loan rate or having insufficient collateral (Foos et al., 2010). Therefore, those banks are exposed to more risk.
8. Different from most of the previous studies, for a more robust analysis, in addition to pooled Ordinary Least Squares (OLS), the fixed-effects Generalized Least Squares (GLS), and the one-step system Generalized Method of Moments (GMM) dynamic panel estimator methods are also used to compute the *H*-statistics. The H-statistic reported and used in the analysis is the result of Pooled Ordinary Least Squares (OLS), if required, the results of other models are available on request.
9. Different from most of the previous studies, for a more robust analysis, pooled Ordinary Least Squares (OLS), the fixed-effects Generalized Least Squares (GLS), and the one-step system Generalized Method of Moments (GMM) dynamic panel estimator methods are used to compute the *H*-statistics. All results support the evidence of monopolistic competition in Turkish banking environment. The H-statistic reported here is the result of Pooled Ordinary Least Squares (OLS), if required, the results of other models are available on request.

REFERENCES

- Aktan, B., and O. Masood, 2010, "The State of Competition of the Turkish Banking Industry: An Application of the Panzar-Rosse Model," *Journal of Business and Management* 11, 131-145.

- Allen, F., and D. Gale, 2000, "Financial Contagion," *The Journal of Political Economy* 108(1), 1-33.

- Allen, F., and D. Gale, 2004, "Competition and Financial Stability," *Journal of Money, Credit and Banking* 26(3), 453-480.

- Altunbas, Y., S. Carbo, E. P. M. Gardener, and P. Molyneux, 2007, "Examining the Relationships Between Capital, Risk and Efficiency in European Banking," *European Financial Management* 13, 49–70.

- Arellano, M., and S. Bond, 1991, "Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations," *Review of Economic Studies* 58, 277–297.

- Arellano, M., and O. Bover, 1995, "Another Look at the Instrumental Variable Estimation of Error-Components Models," *Journal of Econometrics* 68, 29–51.

- Ariss, R.T., 2010, "On the Implications of Market Power in Banking: Evidence from Developing Countries," *Journal of Banking and Finance* 34(4), 765–775.

- Baltagi, B., 2001, *Econometric Analysis of Panel Data* UK: John Wiley & Sons Ltd., 2nd Ed.

- Beck, T., and R. Levin, 2004, "Stock Markets, Banks, and Growth: Panel Evidence," *Journal of Banking and Finance* 28(3), 423 – 442.

- Beck, T., A. Demirguc-Kunt, and R. Levine, 2006, "Bank Concentration, Competition, and Crises: First Results," *Journal of Banking and Finance* 30(5), 1581-1603.

- Berger, A. N., L. Klapper,,and R. Turk-Ariss, 2009, "Bank Competition and Financial Stability," *Journal of Financial Services* 35(2), 99-118.

- Besanko, D., and A.V. Thakor, 1993, "Relationship Banking, Deposit Insurance and Bank Portfolio," In: *Capital Market and Financial Intermediation,* edited by Mayer, C., and X. Vives, 262–265. Cambridge, UK: Cambridge University Press.

- Bikker, J. A., and K. Haaf, 2002, "Competition, Concentration and Their Relationship: An Empirical Analysis of the Banking Industry," *Journal of Banking and Finance* 26, 2191–2214.

- Blundell, R., and S. Bond, 1998, "Initial Conditions and Moment Restrictions in Dynamic Panel Data Models," *Journal of Econometrics* 87, 115–143.

- Bofondi, M., and G. Gobbi, 2004, "Bad Loans and Entry Into Local Credit Markets," *Temi di Discussione del Servizio Studi* 509, Bank of Italy.

- Bongini, P., L. Laeven,and G. Majnoni, 2002, "How Good is the Market at Assessing Bank Fragility? A Horse Race Between Different Indicators," *Journal of Banking and Finance* 26, 1011–1028.

- Boyd, J. H., and G. De Nicolo, 2005, "The Theory of Bank Risk Taking and Competition Revisited," *Journal of Finance* 60, 1329–1343.

- Boyd, J.H., G. De Nicolo, and A. Al Jalal, 2006, "Bank Risk Taking and Competition Revisited: New Theory And New Evidence," *International Monetary Fund Working Paper* 06/297.

- Boyd, J.H., G. De Nicoló, and B.D. Smith, 2004, "Crises in Competitive Versus Monopolistic Banking Systems," *Journal of Money, Credit and Banking* 36, 487-506.

- Brewer, E.III., and M.R. Saidenberg, 1996, "Franchise Value, Ownership Structure, and Risk at Savings Institutions" *Federal Reserve Bank of New York Research Paper* 9632.

- Carbo, S., D. Humphrey, J. Maudos, and P. Molyneux, 2009, "Cross-Country Comparisons of Competition and Pricing Power in European Banking," *Journal of International Money and Finance* 28, 115–34.

- Carletti, E., (2005), Competition and Regulation in Banking. Center for Financial Studies.

- Casu, B., and C. Girardone, 2006, "Bank Competition, Concentration and Efficiency In The Single European Market," *The Manchester School* 74, 441–468.

- Chan, Y.S., S. Greenbaum, and A. Thakor, 1986, "Information Reusability, Competition and Bank Asset Quality," *Journal of Banking and Finance* 10, 243-53.

- Chang, R., and A. Velasco. 2001, "A Model of Financial Crises In Emerging Markets," *The Quarterly Journal of Economics* 116 (2), 489–517.

- Cho, Y.J, 1986, "Inefficiencies from Financial Liberalization in the Absence of Well-Functioning Equity Markets," *Journal of Money, Credit and Banking* 26(2), 341–344.

- Claessens, S., and L. Laeven. 2004, "What Drives Bank Competition? Some International Evidence," *Journal of Money, Credit and Banking* 36, 563–84.

- Cordella, T., and E. L. Yeyati, 2002, "Financial Opening, Deposit Insurance, and Risk in A Model of Banking Competition," *European Economic Review* 46, 471-485.

- De Bandt, O., and E. P. Davis, 2000, "Competition, Contestability and Market Structure in European Banking Sectors on the Eve of EMU," *Journal of Banking and Finance* 24, 1045–1066.

- De Nicolo, G., 2000, "Size, Charter Value and Risk in Banking: An International Perspective," *International Finance Discussion* 689, Board of Governors of the Federal Reserve System.

- De Nicolo, G., P. Bartholomew, J. Zaman, and M. Zephirin, 2004, "Bank Consolidation, Internationalization and Conglomeration: Trends and Implications for Financial Risk," *Financial Markets, Institutions and Instruments* 13, 173–217.

- De Nicolo, G., and E. Loukoianova, 2007, "Bank Ownership, Market Structure and Risk," *Monetary Fund Working Paper*: 07/215.

- Demirguc-Kunt, A., L. Laeven, and R. Levine, 2004, "Regulations, Market Structure, Institutions, and the Cost of Financial Intermediation," *Journal of Money, Credit and Banking* 36, 593–622.

- Demsetz, R. S., and P. E. Strahan, 1997, "Diversification, Size, and Risk at Bank Holding Companies," *Journal of Money, Credit and Banking* 29, 300–313.

- Demsetz, R.S., M.R. Saidenberg, and P.E. Strahan, 1996, "Banks with Something to Lose: the Disciplinary Role of Franchise Value," *FRBNY Economic Policy Review* October,1–14.

- Dick, A., 2006, "Nationwide Branching and Its Impact on Market Structure, Quality and Bank Performance," *Journal of Business* 79, 567–592.

- Dickey, D. A., and W.A. Fuller, 1979, "Distribution of The Estimators for Autoregressive Time Series with a Unit Root," *Journal of the American Statistical Association* 74, 427–431.

- Dornbush, R., and A. Reynoso, 1989, "Financial Factors in Economic Development," *American Economic Review* 79(2), 204–209.

- Foos, D., L. Norden, and M. Weber, 2010, "Loan Growth and Riskiness of Banks," *Journal of Banking and Finance* 34(12), 2929-2940.

- Fry, M.J., 1988, "Money. Interest and Banking in Economic Development," Baltimore: The John Hopkins University Press,

- Fungáčová, Z., and L. Weill, 2009, "How Market Powers Influences Bank Failures: Evidence from Russia," *Working Paper, Bank of Finland*.

- Furlong, F.T., and M.C. Keeley, 1989, "Bank Capital Regulation and Risk Taking: A Note," *Journal of Banking and Finance* 13, 883–891.

- Gelos, R. G., and J. Roldos, 2004, "Consolidation and Market Structure in Emerging Banking Systems," *Emerging Markets Review* 5, 39–59.

- Goddard, J., and J. O. S. Wilson, 2009, "Competition in Banking: A Disequilibrium Approach," *Journal of Banking and Finance* 32, 2282-2292.

- Gonzalez, F., 2005, "Bank Regulation and Risk-Taking Incentives: An International Comparison of Bank Risk" *Journal of Banking and Finance* 29, 1153–1184.

- Hellmann, T.F., K.C. Murdock, and J.E. Stiglitz, 2000, "Liberalization, Moral Hazard in Banking, and Prudential Regulation: Are Capital Requirements Enough?" *American Economic Review* 90(1), 147–165.

- Hong L., and J.O.S. Wilson, 2012, Competition and Risk in Japanese Banking," *The European Journal of Finance*, DOI:10.1080/1351847X.2011.633614.

- Hong L., P. Molyneux, and L. H. Nguyen, 2012, "Competition and Risk in South East Asian Commercial Banking," *Applied Economics* 44(28), 3627-3644.

- Im, K. S., M. H. Pesaran, and Y. Shin, 2003, "Testing for unit roots in heterogeneous panels," *Journal of Econometrics* 115(1), 53-74.

- Jayaratne, J., and P.E. Strahan, 1998, "Entry Restrictions, Industry Evolution, and Dynamic Efficiency: Evidence from Commercial Banking," *Journal of Law and Economics* April (XLI), 239–273.

- Jensen, K., 1989, "Monetary policy and financial development", In: *Financing Economic Development: A Structural Approach of Economic Development,* edited by E.V.K.Fitzgerald, and R.Vos. Gower. Brookfield: .Publishing Company Ltd.

- Jimenez, G., J.A. Lopez, and J. Saurinaa. 2013, "How Does Competition Affect Bank Risk-taking?" *.Journal of Financial stability* 9, 185-195.

- Jimenez, G., J.A. Lopez, and J. Saurina, 2008, "How Does Competition Impact Bank Risk Taking" *Working Paper. Bank of Spain*.

- Kashyap, A.K., J.C. Stein, and D.W Wilcox. 1993. "Monetary Policy and Credit Conditions: Evidence from the Composition of External Finance." *The American Economic Review* 83(1): 78-98.

- Keeley, M.C., 1990, "Deposit Insurance, Risk and Market Power in Banking," *American Economic Review* 80, 1183–1200.

- Koetter, M., and T. Poghosyan, 2009, "The Identification of Technology Regimes in Banking: Implications for the Market Power-Financial Fragility Nexus," *Journal of Banking and Finance* 33, 1413-1422.

- Köhler, M., 2012, "Which Banks are More Risky? The Impact of Loan Growth and Business Model on Bank Risk-taking," *Deutsche Bundesbank Discussion Paper*: 33/2012.

- Laven, L., 2006, "Banking Sector Performance in East Asian Countries: The Effects of Competition, Diversification, And Ownership. A background paper for 'East Asian Finance: The Road to Robust Markets," *Mimeo, World Bank.*

- Laven, L., and G. Majoni, 2003, "Loan Loss Provisioning and Economic Slowdowns: Too Much, Too Late?," *Journal of Financial Intermediation* 12, 178-197.

- Levin, A., C. Lin, and C. James Chu., 2002, "Unit Root Tests in Panel Data: Asymptotic and Finite-Sample Properties," *Journal of Econometrics* 108(1), 1-24.

- Marcus, A.J., 1984, "Deregulation and Bank Financial Policy," *Journal of Banking and Finance* 8, 557–565.

- Marquez, R. 2002, "Competition, Adverse Selection, and Information Dispersion in the Banking Industry," *Review of Financial Studies* 15, 901–926.

- Martinez-Miera, D., and R. Repullo, 2010, "Does Competition Reduce the Risk of Bank Failure?," *Review of Financial Studies* 23(10), 3638–3664.

- Matutes, C., and X. Vives, 1996, "Competition for Deposits, Fragility, and Insurance," *Journal of Financial Intermediation* 5, 184-216.

- Matutes, C., and X. Vives, 2000, "Imperfect Competition, Risk Taking and Competition in Banking," *European Economic Review* 44, 1–34.

- Nash, R. C., and J. F. Sinkey, 1997, "On Competition, Risk, and Hidden Assets in the Market for Bank Credit Cards,' *Journal of Banking and Finance* 21, 89–112.

- O'Hara, M., and S. Wayne, 1990, "Deposit Insurance and Wealth Effects: The Value of Being `Too Big To Fail,'" *Journal of Finance* 45, 1587-1600.

- Özcan, A, 2012, "Türkiye'de Ticari Bankacılık Sektöründe Rekabet Düzeyinin Belirlenmesi (2002-2009)," *Cumhuriyet Üniversitesi, İktisadi ve İdari Bilimler Dergisi* 13(1), 195-211.

- Panzar, J.C., and J.N. Rosse, 1987, "Testing for Monopoly Equilibrium," *Journal of Industrial Economics* 35, 443–456.

- Rhoades, S.A., and R.D. Rutz, 1982, "Market Power and Firm Risk. A Test of the 'Quiet Life' Hypothesis," *Journal of Monetary Economics* 9, 73–85.

- Ruckes, M. 2004, "Bank Competition and Credit Standards," *The Review of Financial Studies* 17(4), 1073-1102.

- Sáez, L., and X. Shi, 2004, "Liquidity Pools, Risk Sharing, and Financial Contagion" *Journal of Financial Services Research* 25(1), 5-23.

- Salas, V., and J. Saurina, 2003, "Deregulation, Market Power and Risk Behavior in Spanish Banks," *European Economic Review* 47, 1061–1075.

- Saunders, A., and B. Wilson, 1996, "Bank Capital Structure: Charter Value and Diversification Effects," *Working Paper:* S-96-52, New York University Salomon Center.

- Schaeck, K., and M. Čihák, 2007, "Banking Competition and Capital Ratios," *IMF Working Paper*: 07/216. Washington: International Monetary Fund.

- Schaek, K., M. ˇCihak, and S. Wolfe, 2006, "Are More Competitive Banking Systems More Stable?," *IMF Working Paper:* 06/143.

- Shaffer, S., 1982, "A Non-Structural Test for Competition in Financial Markets," In Proceedings of a Conference on Bank Structure and Competition by Federal Reserve Bank of Chicago, 225-243. Chicago.

- Soedarmono, W., F. Machrouh, and A. Tarazi, 2011, "Bank Market Power, Economic Growth and Financial Stability: Evidence from Asian Banks," *Journal of Asian Economics* 22(6), 460–470.

- Soedarmono, W., F. Machrouh, and A. Tarazi, 2013, "Bank Competition, Crisis and Risk Taking: Evidence from Emerging Markets in Asia," *Journal of International Financial Markets, Institutions & Money* 23, 196-221.

- Stiglitz, J., and A. Weiss, 1981, "Credit Rationing in Markets with Imperfect Information," *American Economic Review* 71(3), 393–410.

- Stiroh, K. J., 2004, "Diversification in Banking: Is Noninterest Income the Answer?," *Journal of Money, Credit and Banking* 36, 853–882.

- Stiroh, K., and A. Rumble, 2006, "The Dark Side of Diversification: The Case of US Financial Holding Companies," *Journal of Banking and Finance* 30, 2131-2161.

- Tabak, B., D. Fazio, and D. Cajueiro, 2012, "The Relationship between Banking Market Competition and Risk-Taking: Do Size and Capitalization Matter?," *Journal*

of Banking and Finance 36(12), 3366–3381.

- Taylor, L., 1983, Structuralist Macroeconomics: Applicable Models for the Third World. New-York: Basic Books.

- Tunay, B., 2009, "Turk Bankacılık Sektorunde Rekabet ve Kırılganlık," Bankacılar Dergisi 68, 30-54.

- Uhde, A., and U. Heimeshoff, 2009, "Consolidation in Banking and Financial Stability in Europe: Empirical Evidence," *Journal of Banking and Finance* 33, 1299–311.

- Vives, X., 2010, "Competition and Stability in Banking," *CESifo Working Paper* 3050(11), Industrial Organization.

- Wagner, W., 2007, "The Liquidity of Bank Assets and Banking Stability," *Journal of Banking and Finance* 31, 121–39.

- Wagner, W., 2010, "Loan market competition and bank risk-taking," *Journal of Financial Services Research* 37(1), 71–81.

- Yaldız, E., and F. Bazzana, 2010, "The Effect of Market Power on Bank Risk Taking in Turkey," *Financial Theory and Practice* 34(3), 297-314.

- Yeyati, E. L., and A. Micco, 2007, "Concentration and Foreign Penetration in Latin American Banking Sectors: Impact on Competition and Risk," *Journal of Banking and Finance* 31, 1633–47.

APPENDIXES

Appendix 1: Estimation Results: Competition and Bank Risk Taking

Dependent Variable: Z-index	Static Models								Dynamic Models			
	Fixed Effects				Random Effecst Model				Differenced -GMM			
	Model I	Model II	Model III	Model IV	Model I	Model II	Model III	Model IV	Model I	Model II	Model III	Model IV
LNTA	-0.053 (0.771)	0.041 (0.806)	0.022 (0.900)	-0.030 (0.857)	0.071 (0.286)	0.079 (0.246)	0.076 (0.257)	0.071 (0.283)	0.754** (0.045)	0.383*** (0.098)	0.768** (0.018)	0.010 (0.959)
LA/TD	0.007* (0.000)	0.008* (0.000)	0.007* (0.000)	0.007* (0.000)	0.002* (0.000)	0.003* (0.000)	0.003* (0.000)	0.002* (0.000)	0.017* (0.000)	0.016* (0.000)	0.016* (0.000)	0.013* (0.004)
TL/TA	1.468*** (0.069)	1.612** (0.044)	1.608** (0.046)	1.545*** (0.051)	0.560 (0.291)	0.655 (0.214)	0.636 (0.231)	0.603 (0.237)	3.335** (0.031)	2.679*** (0.054)	3.345** (0.016)	5.925* (0.000)
OBS/TA	0.030 (0.406)	0.030 (0.407)	0.029 (0.413)	0.017 (0.635)	-0.001 (0.954)	0.0006) (0.974)	-0.0003 (0.987)	-0.009 (0.701)	0.024 (0.559)	0.010 (0.562)	0.008 (0.812)	-0.111 (0.136)
i	0.003 (0.788)	0.018 (0.161)	0.006 (0.694)	0.005 (0.606)	-0.002 (0.755)	0.010 (0.226)	-0.004 (0.645)	-0.0006 (0.919)	0.017 (0.498)	-0.006 (0.715)	0.050 (0.264)	-0.050* (0.004)
LNGDPG	-0.773 (0.673)	0.206 (0.918)	-0.927 (0.648)	0.630 (0.740)	-0.879 (0.708)	0.045 (0.983)	-1.373 (0.579)	0.583 (0.820)	1.426* (0.001)	1.207* (0.007)	3.028* (0.006)	-1.104 (0.353)
CR3	-7.613 (0.192)				-7.757 (0.104)				10.625** (0.039)			
CR5		7.814 (0.370)				9.470 (0.166)				6.659** (0.025)		
HHI-Assets			-19.583 (0.680)				-29.685 (0.473)				117.148*** (0.068)	
H-statistics				0.820** (0.031)				0.889** (0.025)				-0.045 (0.878)
Number of obs	266	266	266	266	266	266	266	266	187	187	187	187
F-statistic	2.881*	2.879*	2.875*	2.870*								
Hausman test					19.682*	21.418*	20.655*	19.856*				
R-squared	0.276	0.273	0.271	0.276	0.276	0.203	0.253	0.253				
Hansen (p value)									0.227	0.244	0.247	0.207
AR(2)									0.194	0.234	0.150	0.167

Note: *,** and *** denotes statistical significance at the 1%, 5% and 10% level, respectively.

Appendix 2: Estimation Results: Competition and Bank Risk Taking

Dependent Variable: ROA Volatility	Static Models								Dynamic Models			
	Fixed Effects				Random Effecst Model				Differenced -GMM			
	Model I	Model II	Model III	Model IV	Model I	Model II	Model III	Model IV	Model I	Model II	Model III	Model IV
LNTA	-0.003* (0.001)	-0.003* (0.000)	-0.003* (0.000)	-0.004* (0.000)	-0.0007** (0.035)	-0.0008** (0.037)	-0.0007** (0.036)	-0.0007** (0.038)	-0.003* (0.000)	-0.004* (0.000)	-0.004* (0.000)	-0.006* (0.000)
LA/TD	- 0.00009* (0.000)	-0.00009* (0.000)	-0.00009* (0.000)	-0.00009* (0.000)	0.000003 (0.435)	0.000002 (0.651)	0.000002 (0.516)	0.000002 (0.655)	-0.0002* (0.000)	-0.0002* (0.000)	-0.0002* (0.000)	-0.0002* (0.000)
TL/TA	-0.007 (0.139)	-0.007 (0.108)	-0.007 (0.120)	-0.007*** (0.093)	-0.004 (0.139)	-0.005 (0.107)	-0.005 (0.129)	-0.005 (0.117)	0.0003 (0.823)	0.002 (0.369)	0.0006 (0.807)	0.006** (0.033)
OBS/TA	-0.00001 (0.369)	-0.0001 (0.370)	-0.0001 (0.382)	-0.0002 (0.332)	0.00006 (0.343)	0.00004 (0.573)	0.00006 (0.328)	0.00005 (0.469)	-0.00008* (0.000)	-0.0001* (0.000)	-0.0001** (0.010)	-0.00007 (0.563)
i	-0.0002* (0.002)	-0.0002* (0.000)	-0.0002** (0.031)	-0.0002* (0.000)	0.00001 (0.689)	-0.00009 (0.302)	0.00008*** (0.053)	-0.00002 (0.507)	0.000002 (0.925)	-0.00001 (0.600)	-0.0001 (0.140)	-0.0001** (0.037)
LNGDPG	0.0003 (0.971)	-0.004 (0.695)	0.003 (0.799)	0.001 (0.921)	0.009 (0.380)	0.003 (0.616)	0.019 (0.192)	0.007 (0.475)	0.004* (0.002)	0.001 (0.165)	-0.002 (0.390)	-0.001 (0.110)
CR3	0.030 (0.377)				0.084** (0.030)				0.001 (0.853)			
CR5		-0.042 (0.405)				-0.071 (0.287)				-0.013 (0.239)		
HHI-Assets			0.188 (0.500)				0.586** (0.023)				-0.298 (0.105)	
H-statistics				0.001 (0.639)				0.001** (0.016)				-0.001*** (0.063)
No.of obs	226	226	226	226	226	226	226	226	187	187	187	187
F-statistic	5.722*	5.950*	5.806*	5.974*								
Hausman test					99.216*	97.378*	96.264*	97.586*				
R-Squared	0.463	0.462	0.462	0.461	0.441	0.426	0.462	0.461				
Hansen (p value)									0.602	0.604	0.661	0.612
AR(2)									0.564	0.797	0.884	0.551

Note: *,** and *** denotes statistical significance at the 1%, 5% and 10% level, respectively.

Appendix 3: Estimation Results: Competition and Bank Risk Taking

Dependent Variable: LLPTL	Static Models								Dynamic Models			
	Fixed Effects				Random Effecst Model				Differenced -GMM			
	Model I	Model II	Model III	Model IV	Model I	Model II	Model III	Model IV	Model I	Model II	Model III	Model IV
LNTA	-0.448** (0.017)	-0.297*** (0.083)	-0.403* (0.026)	-0.312*** (0.076)	0.001 (0.974)	0.001 (0.965)	0.001 (0.974)	0.002 (0.955)	-0.018* (0.000)	-0.020* (0.000)	-0.018* (0.000)	0.001 (0.814)
LA/TD	0.063* (0.000)	0.063* (0.000)	0.063* (0.000)	0.063* (0.000)	0.022* (0.000)	0.022* (0.000)	0.022* (0.000)	0.022* (0.000)	-0.0006 (0.105)	-0.000*** (0.071)	-0.0006 (0.122)	-0.003* (0.000)
TL/TA	-0.887 (0.285)	-0.561 (0.494)	-0.802 (0.331)	-0.648 (0.433)	-1.164* (0.009)	-1.099** (0.013)	-1.163* (0.009)	-1.136** (0.011)	-0.129* (0.000)	-0.124* (0.000)	-0.124* (0.000)	-0.378* (0.000)
OBS/TA	0.021 (0.565)	0.022 (0.548)	0.018 (0.607)	0.020 (0.580)	0.010 (0.673)	0.011 (0.638)	0.010 (0.681)	0.011 (0.638)	-0.001 (0.143)	-0.001 (0.169)	-0.001 (0.160)	0.006* (0.000)
i	-0.037* (0.002)	-0.039* (0.003)	-0.046* (0.004)	-0.026** (0.018)	-0.012*** (0.095)	-0.032* (0.005)	-0.016 (0.164)	-0.011 (0.115)	-0.00*** (0.068)	-0.0007** (0.014)	-0.0006 (0.344)	-0.0004 (0.204)
LNGDPG	-1.090 (0.560)	-2.311 (0.271)	-2.305 (0.272)	-0.717 (0.719)	1.068 (0.563)	-1.057 (0.609)	0.724 (0.714)	0.896 (0.650)	-0.067* (0.000)	-0.064* (0.000)	-0.061* (0.006)	-0.050* (0.000)
CR3	-11.119*** (0.065)				-2.165 (0.686)				0.013 (0.897)			
CR5		-15.079*** (0.093)				-20.53** (0.022)				0.228** (0.048)		
HHI-Assets			-81.923*** (0.095)				-21.366 (0.640)				0.671 (0.438)	
H-statistics				0.057 (0.886)				-0.090 (0.814)				-0.014* (0.001)
No.of obs	259	259	259	259	259	259	259	259	179	179	179	179
F-statistic	6.672*	6.435*	6.628*	6.447*								
Hausman test					173.4*	167.2*	171.8*	167.5*				
R-Squared	0.568	0.567	0.567	0.562	0.236	0.246	0.237	0.236				
Hansen (p-value)									0.475	0.432	0.441	0.496
AR(2)									0.128	0.113	0.134	0.271

Note: *,** and *** denotes statistical significance at the 1%, 5% and 10% level, respectively.

Appendix 4: Estimation Results: Competition and Bank Risk Taking

Dependent Variable: LUFTL	Static Models								Dynamic Models			
	Fixed Effects				Random Effecst Model				Differenced -GMM			
	Model I	Model II	Model III	Model IV	Model I	Model II	Model III	Model IV	Model I	Model II	Model III	Model IV
LNTA	-0.611** (0.014)	-0.410*** (0.070)	-0.549** (0.022)	-0.433*** (0.063)	-0.011 (0.824)	-0.011 (0.833)	-0.012 (0.819)	-0.010 (0.893)	-0.010** (0.015)	-0.024* (0.000)	-0.020* (0.000)	0.035** (0.012)
LA/TD	0.085* (0.000)	0.085* (0.000)	0.085* (0.000)	0.085* (0.000)	0.031* (0.000)	0.030* (0.000)	0.031* (0.000)	0.031 (0.148)	-0.0004* (0.005)	-0.0006** (0.026)	-0.0004* (0.006)	-0.003* (0.000)
TL/TA	-1.172 (0.285)	-0.740 (0.495)	-1.057 (0.332)	-0.857 (0.432)	-1.507** (0.010)	-1.423** (0.015)	-1.525** (0.010)	-1.474 (0.224)	-0.304* (0.000)	-0.353* (0.000)	-0.326* (0.000)	-0.965* (0.000)
OBS/TA	0.030 (0.532)	0.031 (0.516)	0.027 (0.573)	0.029 (0.555)	0.014 (0.665)	0.015 (0.630)	0.014 (0.668)	0.015 (0.756)	0.002** (0.024)	0.001 (0.115)	0.001** (0.037)	0.025* (0.000)
i	-0.051* (0.002)	-0.054* (0.002)	-0.063* (0.003)	-0.036** (0.013)	-0.017*** (0.078)	-0.043* (0.004)	-0.022 (0.144)	-0.016 (0.323)	0.0009* (0.003)	0.0002 (0.467)	0.0001 (0.710)	0.001** (0.044)
LNGDPG	-1.530 (0.237)	-3.121 (0.260)	-3.124 (0.260)	-0.984 (0.709)	1.379 (0.572)	-1.436 (0.599)	0.900 (0.730)	1.209 (0.309)	0.004 (0.823)	-0.003 (0.914)	-0.012 (0.588)	-0.256* (0.000)
CR3	-14.797*** (0.063)				-2.785 (0.694)				0.503* (0.000)			
CR5		-19.732*** (0.097)				-27.19** (0.022)				0.634 (0.000)		
HHI-Assets			-107.82* (0.009)				-27.487 (0.649)				1.319* (0.003)	
H-statistics				0.109 (0.835)				-0.086 (0.673)				-0.087* (0.000)
No.of obs	259	259	259	259	259	259	259	259	179	179	179	179
F-statistic	7.065*	6.818*	7.015*	6.833*								
Hausman test					183.3*	176.9*	177. 9*	177.3*				
R-Squared	0.584	0.582	0.582	0.577	0.244	0.254	0.248	0.244				
Hansen (p value)									0.230	0.187	0.191	0.475
AR(2)									0.150	0.181	0.152	0.174

Note: *,** and *** denotes statistical significance at the 1%, 5% and 10% level, respectively.

ELECTRICITY SUPPLIER SWITCHING: A CONCEPTUAL MODEL BASED ON MIGRATION THEORY

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Service switching, Switching factors, Pull-Push-Mooring Model, Migration theory, Utilities.

JEL Classification
C10,G30,M10

ABSTRACT

Electricity sector liberalization is moving forward with the purpose of efficiency, better customer service, and lower prices; however it has not fully succeeded yet, neither in Europe nor in the rest of the world. While service provider switching is an indicator of successful liberalization, it also means customer loss and acquisition from the electricity suppliers' point of view. Therefore, it has a significant importance for both the market regulator and market participants including customers and suppliers, making it a concept that should be understood thoroughly. This paper aims to build a conceptual model of electricity supplier switching behavior to be tested for a relatively neglected customer segment in the business to business market [B2B]: small and medium enterprises [SME]s. The model can also be used for business to consumer [B2C] segment because of the similar behaviors of small organizations and individuals. The model proposed in this study is mainly based on the study of Bansal et al. (2005) who adopt push, pull, and moorings [PPM] migration model to switching, using the similarities between human migration and customer switching. An extensive literature research is conducted to support and contribute to the existing PPM model and to have an extended version of it.

1. INTRODUCTION

Liberalization is moving forward in the global energy markets with the aim of competitive market environments where the consumers could enjoy the best prices and service quality (Annala et al. 2013) with a superior operating efficiency (Payne & Frow, 1997). However, consumers might not be willing to create a market of high mobility (Brennan, 2007) that pushes suppliers for lower prices and better performance. European Energy Regulators Group for Electricity & Gas [ERGEG] (2010) is likeminded, announcing that the evolution of the competition is still slow. The world's situation is no different. 2011 global average of switching rates in 38 electricity markets is 7.75% (VaasaETT, 2012b). VaasatETT (2012a) reveals that there is a little correlation between potential savings and switching levels. Consumers are failing to switch for their own good (Gamble et al., 2009). Despite "high switching rates alone should not be considered a proof of a well-functioning market"

(Annala et al., 2013), customer activity is the first and a useful indicator to be monitored in order to assess the liberalization success (Defeuilley, 2009). It takes three sides to achieve it: Suppliers providing best offers, customers actively seeking for them, and regulatory bodies providing the best market mechanism that creates this environment. However, the customer side is still lacking, and lower prices are insufficient to motivate them. Therefore; identification of other switching factors is critical to operating an efficient market environment.

Many studies have been conducted to understand the switching reasons since 1990's in the marketing literature for a variety of service sectors such as telecommunications and banking. Studies in the electricity supply market have recently started to grow, with more attention to the household consumers (e. g. Walsh et al., 2005; Gamble et al., 2009; Annala et al., 2013; Gerpott & Mahmudova, 2010; Hartmann & Ibanez, 2007; Walsh et al., 2006; Ibáñez et al., 2006). B2B customers were on the researchers' radar starting with 2000's, yet they have not drawn as much attention as households, especially SMEs.

In conclusion; switching activity (1) has key importance to monitor the success of liberalization process and (2) SME segment's switching behavior in electricity supply markets has not been adequately covered by the previous literature. The purpose of this study is to propose a conceptual switching model for academicians, energy sector professionals and regulatory bodies to utilize with the purpose of having a clearer understanding of switching activity for their specific agendas. While achieving this, Bansal et al. (2005) PPM model of switching, which uses the resemblance between migration theory and service switching, is considered as the basis of the proposed model. Energy sector's status and migration theory literature is discussed prior to the extended switching model conceptualization.

2.ELECTRICITY SUPPLY MARKET

Liberalization of electricity markets includes privatization of public energy assets, launching competition through market structure change, and the establishment of a sector regulatory body (Pollitt, 2011). The aim of liberalization, in general, is a market structure that provides benefits to the society, transferred through lower prices and higher value (Joskow, 2008). However, the pursuit of success is still not over, as issues are reported by many studies. Turkey, a semi-liberalized energy market, is also getting its share of those issues.

1.1. Global Market

Discussion on the liberalization of energy markets started in the early 1980s, followed by reform commencements of several emerging and developed countries (Karan & Kazdagli, 2011). Most of these reform plans were prepared based on the methodology called the "standard textbook model" (Larsen, 2013). The standard textbook included several key components: (a) privatization of public energy monopolies, (b) vertical unbundling of the

value chain, (c) horizontal restructuring of the generation, (d) creating a single independent system operator, (e) the establishment of spot energy markets, (f) the development of active "demand-side" institutions, (g) the application of regulatory rules, (h) implementation of supplier of last resort structure, (i) the creation of independent regulatory bodies, and (j) transition mechanisms (Joskow, 2008). Positive results are obtained in Nordic countries, the UK, Chile, and certain Latin-American countries as the result of implementation of the textbook model (Larsen, 2013), however significant issues are experienced such as unhealthy market concentration and investment problems in Chile and Argentina (Erdogdu, 2010; Joskow, 2008). Much of Europe, Japan, and large portions of the United States [US] have not followed the textbook model and they experienced performance problems as well (Joskow, 2008; Pollitt, 2007). The examples show that the competition in electricity supply market is externally dependent on the competition in the electricity generation market, in addition to its internal dynamics. Therefore, the role and the determination of the regulatory body to provide the competition at both markets are keys to the success of the reform process.

1.2. European Market

EU countries have targeted to structure an integrated liberal energy market in the long term since the 1990s (Karan & Kazdagli, 2011; Larsen, 2013). After Green Paper had been published in 1995, European Comission [EC] Directives were launched for the liberalization of electricity markets. First one was the Directive 96/92/EC and has significantly supported the internal market for electricity (Karan & Kazdagli, 2011). The second one, Directive 2003/54/EC was adopted in 2003 setting forth that the retail market would be fully liberalized in 2007. While EC is the driving force behind the reform process in EU, the UK was the first European country and became the main driver for further developments in EU (Karan & Kazdagli, 2011). As of 2010, the liberalization level has varied throughout Europe, from monopolies in some countries in central, east, and south eastern parts to highly competitive markets in the UK or Nordics, as shown in Figure 1.
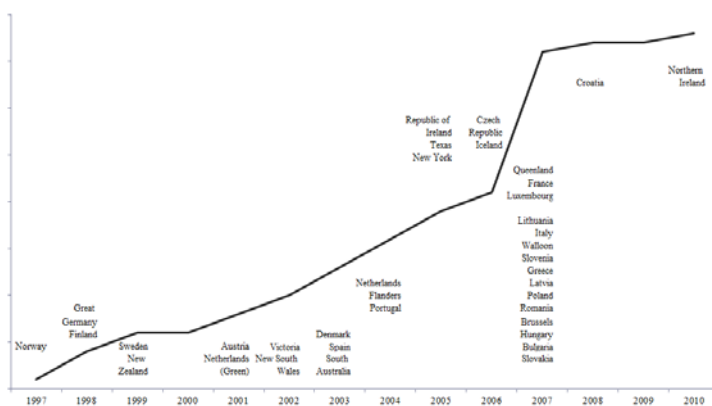

Figure 1: Full electricity retail competition timeline (Source: VaasaETT, 2012b).

Despite the UK has had the most competitive retail market globally (Littlechild, 2014), the switching rates have started decreasing since 2008. As of 2013, 62% of customers were not able to recall their past switching activities, and 37% were still with their regional incumbents (Ofgem, 2013). Despite some problems in Nordic retail markets in the past, switching rates such as 6.7% in Denmark, 7.7% in Finland, 9.9% in Sweden and around 13.0% in Norway (Nordic Energy Regulators [NordREG], 2013) are the signs of a relatively well performing market.

However, the development of retail competition falls behind the expectations (Finon & Boroumand, 2011). Also the expected results regarding competition haven't been achieved, despite the EU requirements of unbundling and liberalization (Hall et al., 2009).

1.3. Turkish Market

A fundamental reform was started with unbundling of the monopoly state-owned Turkish Electricity Administration [TEK] into transmission, distribution, wholesale, and generation companies mostly based on the Electricity Market Law [Law No 4628] enacted in 2001. In addition, Turkish Energy Markets Regulatory Authority [EPDK] was independently established (Ergun & Gokmen, 2013) "in order to perform the regulatory and supervisory functions in the market" (EPDK, 2012). The Electricity Market Reform and Strategy Paper was published in March 2004, envisaging privatization of the public facilities (Akkemik, 2009), followed by a "massive privatization process" (EPDK, 2012). In the same year, free market rules were established by the Balancing and Settlement Regulation [DUY] enacted in November 2004. In 2009, Strategy Paper of the State Planning Organization was published aiming competition in energy markets to ensure efficiency and cost savings reflected to customers, in which the eligibility limit was foreseen to be zero by 2016. In 2013, a new Electricity Market Law [Law No 6446] was announced, which set forth the legal unbundling of distribution and retail operations as of December 31, 2012.

Despite the significant steps, Turkish Competition Authority [TCA] (2015) has recently identified several problems and made recommendations regarding the electricity market. According to the report; switching rates are low, which is especially a result of distribution companies' obstruction of switching. It is recommended that switching processes should be simplified. DUY amendment was announced by EPDK in 28.03.2015, and it is expected to reduce switching obstruction issues. Another important topic of the report is about the Electricity Markets Operation Company [EPİAŞ] that will take over the market operation responsibility of the Turkish Electricity Transmission Company [TEİAŞ]. It is recently formed and expected to be active in 2016, providing a more transparent market with future trading operations. TCA (2015) report also states that (1) consumer awareness should be increased, (2) regulated tariffs are still in place being a burden for the competition, (3) the theoretical market opening ratio reached 90% as of 2014, however, the realized market opening ratio is below 40%.

Briefly, Turkey has made a significant development since the early 2000s, yet there are still problems regarding competition and customer mobility. 2016 is expected be a turning point provided that the full unbundling is in place, the eligibility limit is zero, regulatory tariff is obsolete, EPİAŞ is actively working, and results of DUY amendment are being obtained. On the eve of this new era, it is important to understand the reasons of low market activity from the point of customers' perceptions so that regulatory body and the companies can act accordingly, which will speed up the liberalization process.

2. SERVICE SWITCHING

Electricity supply is a service business like telecommunication, insurance and banking. Undoubtedly, the relationship is a key differentiatior of services marketing. The relationship starts with an initial decision to be in, and ends with an incident that puts switching in the customer's agenda (Jones & Sasser, 1995). Satisfaction is known to be the earliest and most popular switching factor in the literature, keeping in mind that "… There are clearly other variables relevant to this relationship" (Jones, 1998). Service quality, switching costs, trust, price, social bonds, value, and many others have also been studied intensively. On the other hand, more elaborated conceptual models for service switching began to appear with late 1990's in the literature. Keaveney (1995), for instance, conducted an incident-based study using Critical Incident Technique [CIT], which outlines procedures for collecting observed incidents. Keaveney (1995) identified a variety of factors such as pricing, inconvenience, core service failure, service encounter failures, the response in service failure, competition, ethical problems, and involuntary switching whereas Jones and Sasser (1995) studied the effects of satisfaction and switching costs on loyalty. In addition, Zeithaml et al. (1996a) revealed service quality as an antecedent of switching intention in both B2B and B2C settings. Gremler and Brown (1996) identified interpersonal bonds as an antecedent of loyalty; alongside satisfaction and switching costs. Bansal (1997) proposed a Service Switching Model [SSM] mostly based on Keaveney (1995)'s study. Next, Bansal & Taylor (1999) published an article by renaming the model as "The Service Provider Switching Model [SPSM]". In addition, Roos (1999) developed Switching Path Analysis Technique [SPAT] based on CIT in order to study switching as a dynamic phenomenon. The author classified the factors under "Pulling, Pushing, and Mooring [PPM]" dimensions. Bansal et al. (2005) proposed another model by adapting PPM model of migration theory in service marketing, using the similarities between them.

Due to the similarities of SMEs and individuals, we believe that the integration of migration theory with switching can enhance our knowledge on the topic. This study aims to identify the determinants of switching and support them by both service switching and migration literature.

In the case of electricity supplier switching, necessary presuppositions should be made to define switching activity accurately because there are cases when an activity, from different angles, may both look switching or staying. To overcome this issue, Lewis (2006) conducted a study for the Finnish Energy Market Authority and ERGEG. The author defines

switching activity as "the number of switches in a given period of time" and states that switching activity can be measured based on three different approaches: the Supply Point Approach (based on total # of supply point switches); the Customer Approach (based on total # of customer switches), and the Energy Volume Approach (based on total volume of energy switched). The customer approach is suitable for the purpose of this study, which aims to understand motivations and experiences related to customer switching.

The real issue of defining switching arises when a customer moves house. Both Lewis and EC Directorate - General for Health & Consumers (2010) reveal that (1) switching to the incumbent, (2) staying with the current supplier, or (3) switching to the previous occupant's supplier while moving are the simplest routes that should not be counted as switching. It is recommended that any switching activity due to moving to another location should be excluded for simplicity while conducting surveys or data mining.

2.1. Service Switching From Migration Theory Perspective

2.1.1. Migration and Switching Resemblance

Migration theory started with Ernst Ravenstein's "Laws of Migration" report published in Journal of the Statistical Society of London Society in 1885. Despite the long history, it is hard to claim that there is a consensus on a clear definition (Moon, 1995). Dyen (1956) states that migration theory "deals with the inferences of population movements and their directions" just as many other studies. Lee (1966) claims that the distance and the difficulty do not matter, as "every act of migration involves an origin, a destination, and an intervening set of obstacles". Du Toit (1990) puts it more simple as "a movement in space", emphasizing that every move, ranging from crossing the street to moving to another country, has similar attributes. Du Toit (1990) concludes to an inclusive definition: "Migration is the movement of intelligent human beings who have evaluated their condition and opted for a change that they feel will improve matters". Lee (1966) defines migration as "a relatively permanent change of usual residence" (McHugh et al., 1995). Consequently; a migration involves a relocation of the migrant for a reason and a level of obstacles during the process. It can be seen that this conception matches service switching in many aspects when migration terms are replaced with service switching terms: "service switching involves moving to another service provider for achieving better offers and a level of obstacles during the switching process."

2.1.2. PPM Model of Migration

The migration activity has been explained as the resultant of push and pull factors since Ravenstein (Dorigo & Tobler, 1983). Push factors are defined as the dissatisfying attributes of the current location and pull factors are the attractive attributes of the other locations (Dorigo & Tobler, 1983; Zengyan et al., 2009). As emphasized by Du Toit (1990), Heberle (1938) separated these factors with the push-pull theory. In 1960's, models have started to include different factors under push and pull factors (Stimson & Minnery, 1998). Wolpert (1966) created one of the earliest behavioral migration models (Fredrickson et al., 1980).

Lee (1966) contributed by proposing the "intervening obstacles" composite construct for PPM model. Brown and Moore (1970) and Speare (1974) expanded it bringing the households into focus as decision makers. Trlin (1976), on the other hand, proposed a model very similar with Lee (1966) in terms of factor classification: "(a) factors associated with the area of origin; (b) factors associated with the area of destination; (c) factors that act as intervening obstacles between origin and destination; and (d) personal factors". Later on Jackson (1986) updated the "obstacles" concept as "intervening variables". Longino (1992), contributed to the push-pull model with a similar concept; namely mooring variables. Moon (1995) also incorporated the mooring variables in the PPM model. Thus, all of the studies cited represent the framework of the PPM Model of switching, which refers the basis of this study and discussed in the following section.

2.2. PPM Model of Switching in the Literature and Extension Alternatives

"The PPM and migration theories have been applied to other contexts, such as in consumer behaviour and marketing domains" (Zengyan et al., 2009) based on the analogy between migrating and service switching. In addition to this analogy; economic views of migration approaches the migrant as "a consumer of regional amenities such as public goods" (Shields & Shields, 1989). This view is more than an analogy approaching migration as a pure service switching.
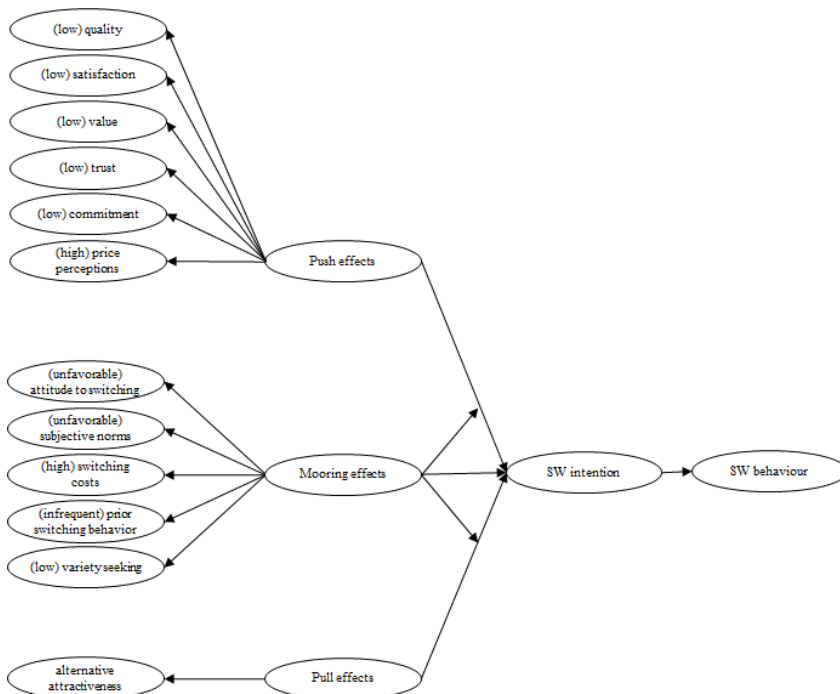

Figure 2: PPM Model of Service Switching (Bansal et al., 2005).

The literature review revealed almost twelve studies that apply PPM model for switching in various sectors (e.g. Bansal et. al, 2005; Lui, 2005; Ek & Söderholm, 2008; Zhang et al., 2008; Listyarini et al., 2009; Zengyan et al., 2009; Naumann et al., 2010; Hou et al., 2011; Ye & Potter, 2011; Fu, 2011; Chiu et al., 2011; Lai et al., 2012; Zhang et al., 2012). The study of Bansal et al. (2005), which was conducted for auto-repair & hairstyling services, is identified as the most elaborated and comprehensive one. The authors developed the model by matching PPM factors in the migration literature with the corresponding switching factors in the service switching literature (Figure 2). Yet, it is believed that additional literature support is needed for the model.

In this section, PPM model of Bansal et al. (2005) constructs are identified and discussed based on migration and service switching literature, including an electricity supply sector perspective; in order to fill the gaps for a more elaborate and electricity market specific behavioral model. Marketing literature supporting PPM model of switching are shown in tables 2 to 16 when appropriate, having all independent and dependent factors mapped to related studies. It is seen that there are a significant number of studies in addition to the ones that Bansal et al. (2005) identified. Table 1 summarizes the migration studies that support Bansal et al. (2005) model including additional studies identified by this study.

Table 1: Migration Literature Studies that Support the Use of PPM Model in Switching

	Related migration literature
push	**service quality** | Brown and Moore (1970), Porell (1982), Stimson and Minnery (1998), Boyle et al. (1999); **satisfaction** | Sell and De Jong (1978), Goldstein (1977), Wolpert (1966), Brown and Moore (1970), Speare (1974), Frederickson et al. (1980), Moon (1995), Stimson and Minnery (1998); **value |** N/A; **trust** | N/A; **commitment** | N/A; **price perceptions** | Heberle (1938), Bogue (1969), Sell and De Jong (1978), Greenwood (1985), Richmond (1988), Massey et al.(1994), Stimson and Minnery (1998)
mooring	**attitude towards switching** | N/A; **subjective norms** | Massey et al. (1994); **switching costs** | Lee (1966), Brown and Moore (1970), Sizer and Smith (1972), Sell and De Jong (1978), Shields and Shields (1989); **prior switching behavior** | Lee (1966), Sell and De Jong (1978), Greenwood (1985), Du Toit (1990), Greenwood et al. (1991), Massey et al. (1994), Fischer and Malmberg (2001), Stimson and Minnery (1998); **variety seeking** | Sizer and Smith (1972), Greenwood et al. (1991)
pull	**alternative attractiveness** | Lee (1966), Dorigo and Tobler (1983), Du Toit (1990), Cadwallader (1992), Moon (1995)

2.2.1. Push Factors

Service quality. Bansal et al. (2005) refer to study of Boyle et al. (1999) stating that "investigations of quality of life examine variables such as physical and economic factors associated with the origin" as an example of related migration literature. When dived deep into the migration literature, it is found that the quality of life is a commonly used migration factor. Brown and Moore (1970) include quality in one of the five main factors of selecting new residence. Porell (1982) addresses quality of life and inner metropolitan migration. Stimson and Minnery (1998) refer to quality as "strong negative attributes tended to relate to congestion, lack of facilities and general dislike of the area". Moon (1995) also discusses quality indicators of life in detail. A detailed literature study is also

conducted for the service switching literature as shown in Table 2, which lists related studies referring quality as a factor influencing switching and the dependent / independent factors identified in the marketing literature.

Looking from the energy sector point of view, service quality components depend on how regulations define electricity suppliers' field of activity. In most of the liberalized energy markets, electricity supply companies are not responsible for electricity grid operations. In other words, electricity suppliers have limited responsibility about the electricity system (Defeuilley, 2009) and technical quality, which must be taken into account while developing the service quality items for the surveys.

Satisfaction. Satisfaction is one of the earliest switching factors studied by many researchers in marketing literature. Bansal et al. (2005) state that "the term satisfaction is used extensively in the migration literature". Sell and De Jong (1978), Goldstein (1977), Wolpert (1966), Brown and Moore (1970), Speare (1974), Frederickson et al. (1980), and Stimson and Minnery (1998) also approach satisfaction as a migration decision factor. Table 4 shows a detailed list of selected past studies that are identified by this study. It is seen that satisfaction is handled as a completely separate factor, however there are exceptions like being approached as a sub construct of relationship quality (Rauyruen & Miller 2007) or with a narrower scope like relationship satisfaction (Caceres & Paparoidamis, 2007).

In addition, satisfaction and service quality concepts can interfere among studies. A good example is the statement articulated by Zeithaml et al. (1996b): "The main factor determining customer satisfaction is the customers' own perceptions of service quality". Cronin et al. (2000) also emphasize this fact stating that customer satisfaction is approached as the result of a customer's perception of value that equals perceived service quality in respect to price (Hallowell, 1996). The distinction can be exhibited as follows: while satisfaction "is a rating of customer's experience with the service outcome" (Mittal and Lassar, 1998) and an "emotional reaction following a disconfirmation experience" (Oliver 1981), service quality is "a judgment made about a firm's resources and skills" (Mittal & Lassar, 1998).

In the utilities sector, satisfaction is approached as a switching factor as well (Walsh et al., 2005). There are a number of studies that show the impact of customer satisfaction on residential customers' loyalty (Ibanez et al., 2006). There are different levels of satisfaction impacts on switching in utilities sector: "while small and medium businesses [SMB] tend to be more satisfied with their energy providers than residential consumers, SMBs are also more than twice as likely to consider switching providers" (Accenture, 2013). Walsh et al. (2005) and Naumann et al. (2010) have similar findings revealing that even satisfied customers may have intentions to switch.

Value. Bansal et al. (2005) do not refer to migration studies regarding value. However they refer to studies of Zeithaml (1988), Bansal and Taylor (1999), and Cronin et al. (2000) in

switching literature. Table 5 shows a detailed list of selected past studies indicating value as an antecedent of behavioral intention, loyalty, repurchase intentions, and repurchase behaviour.

Misconceptions or interfering areas between value and quality and/or value and satisfaction are experienced due to the concept similarity (Cronin et al., 2000). Bansal (2007) mentions Zeithaml (1988)'s conception of value; "the trade-off between quality and sacrifice" (Bansal et al., 2005). Lam (2004) also includes a similar definition as the comparison of weighted benefits and sacrifices; which is articulated by Buzzell and Gale (1987) as "a ratio or trade-off of total benefits received to total sacrifices". Similiarly; Patterson and Spreng (1997) define value as "a ratio or trade-off of total benefits received to total sacrifices".

Trust. The model of Bansal et al. (2005) include "trust" by referring only Richmond's study from the migration literature and state that "… in migration research, a person's trust in his or her relations with others represents a push factor". In service switching context, Bansal et al. (2005) refer to studies of Morgan and Hunt (1994), Garbarino and Johnson (1999), Sharma and Patterson (2000), Hennig-Thurau et al. (2001), and Keaveney (1995). In addition to these studies, trust has been approached in the marketing literature with various constructs and listed in Table 6. The concept is named differently in the literature based on slightly different scopes: trust of supplier, trust of sales-person, brand trust, confidence, confidence benefits, reputation, ethical problems, and trust as a part of relationship quality construct.

Anderson and Narus (1990) state that "trust occurs when one party believes that the other party's actions would result in positive outcomes for itself". Briefly, it is the customer belief that the supplier will deliver as expected benefits in the long term (Lee & Murphy, 2005). In B2B context, trust can be approached using two components, performance / credibility trust and benevolence trust (Ball et al., 2004). There are results that don't support benevolence dimension of trust in B2B settings, where companies seemed to rely more on performance. Yet, SMEs might be expected to behave more like individuals, putting more importance on benelovence.

In the energy sector; trust is generally accepted as a factor influencing energy supplier loyalty (Ibanez et al., 2006). Brand trust improvement can be realized via service integrity and brand communications (Hartmann & Ibanez, 2007). 55% of the customers in Australia are willing to pay more for premium products from a trusted supplier (EY, 2014). Still, there is a remarkable phenomenon in the sector: customers don't trust their energy suppliers whereas suppliers think the opposite (EY, 2011b). This situation might neutralize the impact of trust on switching; as it can lead to negative customers' doubt about being able to find a trusted electricity supplier; which in turn may invalidate the extra supplier effort to build trust.

Commitment. Commitment is "consumer's belief that an ongoing relationship is worth investing in" (Sharma & Patterson, 2000). It is a forward looking factor whereas satisfaction is backward looking (Gustafsson et al., 2005). There are a number of studies found in the literature that reveal commitment as an antecedent of switching (Table 7). In the literature research, it is seen that loyalty and commitment concepts interfere with each other in a portion of the studies. As emphasized by Lam et al. (2004), Oliver (1999) defines loyalty as "a buyer's overall attachment or deep commitment to a product, service, brand, or organization". Likewise, affective commitment (unlike calculative commitment) refers to an sense of belonging (Lewis and Soureli, 2006). Therefore, commitment measures should be defined to differentiate itself from loyalty accurately.

Price. It can be concluded that economic factors in migration literature and price in the service literature are similar concepts. Bogue (1969) emphasizes the criticality of economic variables in migration models. Wage difference and unemployment status between locations are widely used in migration studies such as Heberle (1938), Sell and De Jong (1978), Greenwood (1985), Richmond (1988), Massey et al. (1994), and Stimson and Minnery (1998).

Bansal et al. (2005) list studies of Colgate and Hedge (2001), Keaveney (1995), and Roos (1999) to support price as an antecedent influencing switching. There are a number of additional studies found in the literature that reveal price as an antecedent of switching (Table 10). In these studies; price is approached with similar concepts such as pricing, price changes, pricing problems, expected economic benefits, interest rate (banking sector), and service price. The dependent factors used in those studies are influencing switching attitude, switching intention, switching decision, switching behavior, loyalty, and retention.

In the energy sector, it is suggested that the price perception of the customers should be the focal point to test the price as a factor of switching, because customer perceptions are sometimes different from the reality itself: "European customers do not fully take advantage of savings opportunities that occur with switching. European households could have saved 9% on their electricity bills and 13% on their natural gas bills by switching supplier in 2011" VaasaETT (2012a). Low savings is another critical point while examining price factor. Thelander (2008) and Pakkanen and Narva (2011) reveal that electricity customers may not switch due to low saving perception. Still, Carter London Electricity had lost 30% of its sales instantly to the competitors that offered better prices shortly after liberalization (Payne & Frow, 1997). In Australia, 1 in 8 electricity consumers missed a payment because of high prices (EY, 2014), which indicates that price is critical for a significant part of the customers. As a result, it is important to understand the customer segments' responses to price.

2.2.2. Mooring Factors

Attitude towards switching. Bansal et al. (2005) mention Desbarats (1983)'s study to give an example of attitudes toward migration as an influencer of the migration decision and

Bansal and Taylor (1999)'s study as an example in the service switching literature, stating that "attitude toward switching has been associated with consumers' switching intentions".

Subjective norms. Bansal et al. (2005) refers Gardner (1981), Desbarats (1983), and Ajzen and Fishbein (1980) as studies emphasizing subjective norms as a mooring factor of migration decision. There are additional studies in this respect. For instance, Massey et al. (1994) discuss network theory and refer to migrant networks that "increase the likelihood of emigration by lowering the costs, raising the benefits, and mitigating the risks of international movement" (Massey et al., 1994). In other words; if one's immediate environment is dominated by migrants, perceived migration costs decrease.

Bansal et al. (2005) state that "inclusion of normative concerns in service-switching research is limited". Not much is found in the service switching literature regarding subjective norms. Bansal et al. (2005) mention the study of Bansal and Taylor (1999b) to support that subjective norms is an antecedent of switching.

Switching costs. Gardner (1981); Lee (1966), Sell and De Jong (1978), and De Jong and Gardner (1981) handles cost of migration as a part of mooring factors. Cost of migration is found in many other studies as a mooring factor approached as distance between locations (Sizer & Smith, 1972; Lee, 1966), well defined streams (Lee, 1966), the expenses associated with capital investments at origin as an economic disincentive (Sell & De Jong, 1978), cost of living differences between locations (Shields & Shields, 1989), residential characteristics creating costs (Brown & Moore, 1970) among many others.

Selected studies examining switching costs as an antecedent influencing switching are shown in Table 14. In these studies, switching costs concept includes independent factors such as relationship investment, investment in the relationship, time and effort, information search costs, duration of the introductory rate, apathy, negativity, inertia, and (lack of) number portability, which more or less represent switching costs.

In the energy sector; opacity of offers, excessive number of offers, difficulty level of switching, and ability of former suppliers to obstruct switching (EC Directorate - General for Health & Consumers, 2010) are prominent factors with physical and psychological costs. A number of those factors are usually observed in the early-mid liberalization stages. Still, in a mature market like Australia, consumers experience problems searching "information relating to a prospective electricity retailer's contracts, tariffs, and policies" (EY, 2014) and find switching difficult. Residential energy consumers perceive a little more switching costs (Ibáñez et al. 2006). Fewer options are preferred by some of the customers to reduce selection costs (Brennan, 2007). As emphasized by Annala et al. (2013), difficulties of comparing tariffs have been covered by many studies (Ofgem, 2008; Pakkanen & Narva, 2011; Ek & Söderholm, 2008).

Prior switching behaviour. Bansal et al. (2005) conclude that past behaviour is a mooring variable in the service switching literature, giving examples of Lattin and McAlister (1985) and Ganesh et al. (2000). However, there are a number of additional studies found that examine prior switching activity as an antecedent of switching and are shown in Table 3. The independent latent variables in those studies have a variety of names such as prior switching behavior, prior churn, relationship length, and length of business relationship, all representing similar concepts. Switching behavior, loyalty, and retention are some of the dependent latent variables of the models developed in those studies.

Variety-seeking tendencies. Bansal et al. (2005) refer to Jackson (1986) and Greenwood et al. (1991) to support variety-seeking tendencies as a factor of migration decision. In addition to these studies; Sizer and Smith (1972)'s ambition concept, similar with variety seeking, can also be correlated with migration. In terms of switching, Roos (1999)'s study is identified as an example where variation is revealed as a switching factor. White and Yanamandram (2007) also developed two dimensions for inertia; one of which is a behavioural characteristic defined as "the customer is lazy, inactive, or passive", similar to the variety-seeking construct (Colgate & Lang, 2001) and handled as a repurchase intention factor. Table 13 summarizes mentioned studies and the related constructs.

2.2.3. Pull Factors

Alternative attractiveness. Bansal et al. (2005) state that; "according to the push-pull paradigm, attractive factors at the destination pull the migrant to this destination", referring studies of Moon (1995) and Dorigo and Tobler (1983) as examples of migration research. Conversely, if the alternatives are similar, the migration will less likely to happen (Lee, 1966). Attractiveness is classified by Cadwallader (1992) under physical characteristics of the destination location. Du Toit (1990) also studied attractiveness of alternatives as a factor of migration. Alternatives, even if they existed, may not be to the migrants' knowledge. This makes knowledge of alternatives an antecedent of migration (Bell, 1980).

The situation is similar in the marketing literature: Customers may choose not to switch because alternatives may be worse or not known (Colgate et al., 2007). Bansal et al. (2005) mention Bansal and Taylor (1999), Colgate and Lang (2001), Keaveney (1995), and Sharma and Patterson (2000) as prior relevant service switching literature. There are a number of additional studies referring alternative attractiveness as a factor of service switching (Table 11). Concepts used for alternative attractiveness are alternatives, attractiveness of alternatives, quality of alternative options, attraction by competitors, better service, and apathy. All of these constructs have similar measures and work in the similar logic.

Similiar concerns are valid for energy consumers who need to know if they can switch, where they can switch to, and how much saving they will gain by switching (ACER & CEER, 2013). One of the main reasons for low mobility is that consumers "may not be aware of

the opportunity to switch, alternative suppliers or the potential benefits of switching" (EC Directorate - General for Health & Consumers, 2010).

2.3. Additional Constructs for a Migration Theory Based Switching Model

An extensive literature review both on migration theory and service switching paved the way for new constructs. Thus, it is possible to extend the model of Bansal et al. (2005) and make it more applicable for electricity supply services. These constructs are social bonds, segment focus, image, and influential triggers. The rationale for each construct is discussed in the following sections.

Social Bonds. "Family related factors including the desire to maintain or reestablish familial or other social contacts, as well as seeking to escape such relationships on the part of some people - are significant but less important push factors" (Stimson & Minnery, 1998). In other words, poor relations with the residential environment can lead to a migration decision. Goldscheider (1971) argues that "a high degree of community attachment will inhibit migration" (Sell & De Jong, 1978). In service switching literature, a number of studies are conducted on social bonds as an antecedent of switching under different names and shown in Table 15. In these studies, social bonds is approached using a variety of names such as inter-personal bonds, relational bonds, interpersonal relationships, emotional bonds, relationship investment, special treatment, special treatment benefits, social benefits, personnel, and personal service benefit. For instance; Roos (1999) concludes that personnel have an impact on switching behavior. Gremler and Brown (1996) state that interpersonal relationships are particularly important for loyalty. Other studies have similar findings as well. Based on its existence in both migration theory and service switching literature; the social bonds construct is proposed as a Push factor for the extended model.

Image. Migrants have an image of the target location based on their experiences; prior to information search (Brown & Moore, 1970). For this reason, the image of the location is critical for their decision. Image is also accepted as an antecedent of switching (Lewis and Soureli, 2006; Kim & Yoon, 2004; Aydin & Özer, 2004). Brand building, a similar concept, is also widely discussed in the utilities sector (Hartmann & Ibanez, 2007). Based on its existence in both migration theory and service switching literature (Table 16); the social bonds construct is proposed as one of the Push factors.

Segment Focus. The "demographic composition" of the target location is referred as a migration decision factor (Brown & Moore, 1970), such as "an older person moving to a retirement community" (Stimson & Minnery, 1998). Some migrants tend to choose locations where there are benefits for similar types of people like themselves. Therefore, a resemblance between "demographic composition" and "customer segment" can be easily made. The impact of customer focus and industry knowledge on switching is important in a B2B context (Schertzer, 2006). A significant part of SMEs are attracted by services

tailored to them (Accenture, 2013). As a result of mentioned facts; segment focus construct is proposed as a new construct of Push effects for the extended model.

Influential Triggers. Switching may even occur when there is no specific search for a new supplier. The process can start with a salesperson visit where door-to-door sales are common like in Australia (Annala et al., 2010). EY (2014) reveals that 32% of the consumers switched due to a visit from a door-to-door salesperson. Clemes et al. (2010) and Roos and Gustafsson (2007) discuss the impact of influential triggers in detail, such as advertisements and salesperson visits, on switching (Table 9). As a result, influential triggers is proposed as a new construct of Pull effects in the extended model.

3.   A PROPOSED MODEL FOR SERVICE SWITCHING AND DISCUSSION

Social bonds, segment focus, image, and influential triggers constructs are added in the extended model based on the literature research (Figure 3). Push factors are the weakest predictors as empirically tested by Bansal et al. (2015). Therefore, adding three latent variables in the Push segment is expected to strengthen the future testing of the model. Mooring is the strongest composite construct (Bansal et al., 2015) and is expected to more likely work in future tests as it is. Pull effects composite construct is in the middle in terms of predicting strength, and it is supported by a second factor, namely influential triggers.

There are critical points to be considered before applying the model for electricity markets. Putting importance on these points will increase the probability of a successful testing of the model.

First, there are constructs that show resemblance with other constructs in the model. Satisfaction and value, commitment and trust are some examples given at early sections of this study. The measures should be developed to provide an accurate factor separation in the initial data analysis stage through exploratory factor analysis. A pre-test study will enable to test how accurate the survey questions represent the variables that are assigned to them. Otherwise, there is a risk that some of the factors will merge at the initial phases of data analysis. Merging of factors does not always mean there is a problem with the survey questions; it might be valid and lead to other conclusions as well, provided that all the necessary tests are performed before conducting the surveys.
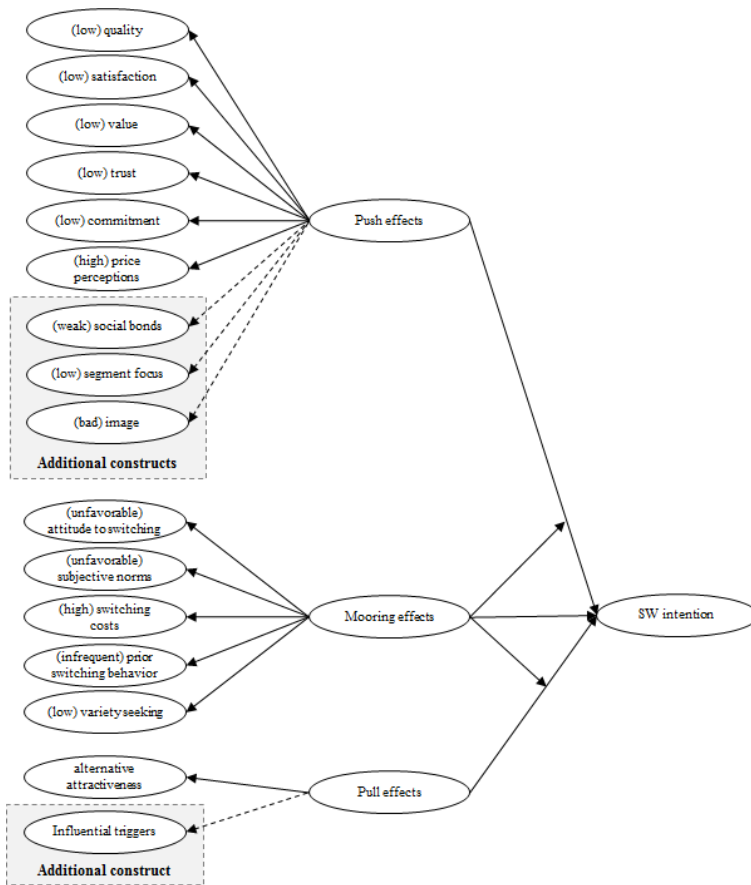
Figure 3: Proposed Migration Theory Based Conceptual Model for Switching.

Second, the original model is applied for auto-repair and hairstyling services, which represents credence and experience services (Bansal et al., 2005) and are not one to one matches with electricity supply. Before anything else, they are B2C sectors. In addition, electricity supply is a sector where purchase decision is made once and the service itself is continuous yet implicit, which makes it out of consumer's agenda until the end of the contract duration or a service incident that makes the consumer re-evaluate the supplier. Therefore, items need to be developed from the literature almost from scratch, which will increase the risk of factor merging/exclusion and/or model fit issues. This makes pre-testing of survey questions more critical for the success of future studies.

Third, Bansal et al. (2005)'s model was tested in Canada. Despite boundaries are dissolving across different cultures and economies (Ger, 1999), which emerges a homogeneous global consumer culture (Cleveland & Laroche, 2007); globalization also empowers

national identities (Ger, 1999). This creates different consumer behaviours in different countries, especially in service sectors where relationship is an important part of the value provided by the companies. Therefore, selected country's culture and its impact on consumer behavior is another factor that will affect the results of model testing.

Fourth, auto-repair and hairstyling is a relatively competitive and unregulated environment whereas even the most competitive energy sector is a highly regulated market. Therefore, the level of liberalization at the energy market where the PPM model is being tested will directly affect the results. By default, consumers are relatively indifferent to the supplier-consumer relationship in the energy sector (EY, 2011a) because they think that electricity is a commodity which had been provided by public companies for years and hardly understand how private companies will create any extra value. In an energy market with a low liberalization level, this indifference effect will be augmented even more and most of the factors in the model will face the risk of being neutral to switching.

Fifth, customer awareness levels are expected to be low in the early stages of liberalization. The lack of awareness, as emphasized by Kruglanski and Klar (1985), is simply the state of unconsciousness (Erdelyi, 1974). "Not every single bit of confident knowledge needs to be linked in a person's awareness with other knowledge" (Kruglanski & Klar, 1985), however "… the behavior is expected to be regulated at some level of awareness such that the relevance of new information can be noticed and taken into consideration" (Bamberg et al., 2003). Clearly, the awareness is necessary for behavioral change. However there is a long path to arrive at the behavioral stage. The theory of planned action and the theory of reasoned action literature widely agree that the behavior is influenced by the intention, the intention is influenced by the attitude, and the attitude is influenced by the belief (Madden et al., 1992). Low awareness levels might not be able to make it to the end of this path made up of belief, attitude, intention, and behavior, respectively. There is a possibility that some factors might be just strong enough, for example, to influence switching attitude instead of intention or behavior.

Sixth, the conceptual model has sixteen independent constructs and a dependent construct. The number of constructs requires a large number of items to be included in a survey study. This situation has several implications. CATI or online surveys may not be able to capture accurate data from the respondents due to their attention span limits. Face to face surveys may require higher budgets due to a large number of cases needed. Reduction of factors can be considered to overcome those limitations; however that comes with the risk of choosing the potential neutral factors and eliminating effective ones.

As a result, necessary actions should be taken in order to address the six potential issues that may be experienced in a future study. Therefore potential model fit problems will be eliminated and an effecting testing of the model will be possible.

4.   CONCLUSION

The PPM model of service switching is applied by a number of studies for different sectors in the literature. Yet, none of the studies fully applied the model. Therefore, there is not sufficient evidence of the applicability of the entire model to other sectors. For this reason, it is recommended to take following steps prior to its application to the energy sector in different countries: (a) Having a clear understanding of the differences between the PPM model's original country and the target country / original sector and the target energy sector (b) Collecting necessary insights about the liberalization level of the target energy sector, and clearly identify its level in respect to other liberalized energy sectors (c) Having a clear understanding of the consumers beforehand, conducting focus groups if necessary (d) Creating the items based on the literature focusing on discrimination of factors in the analysis phase. (e) Eliminating factors beforehand based on focus groups and/or previous PPM applications to fit in the limitations like budget / number of questions / number of cases.

In the light of those recommendations, an effective model of switching can be formed successfully for the energy sector, which is expected to be an important contribution to the academic literature, energy market players, and regulatory bodies.

REFERENCES

- Accenture (2013). The New Energy Consumer Handbook.
- Ajzen, I., & Fishbein, M. (1980). Understanding attitudes and predicting social behaviour.
- Akkemik, K. A., & Oğuz, F. (2011). Regulation, efficiency and equilibrium: A general equilibrium analysis of liberalization in the Turkish electricity market. Energy, 36(5), 3282-3292.
- Annala, S., Viljainen, S., & Tuunanen, J. (2013). Rationality of supplier switching in retail electricity markets. International Journal of Energy Sector Management, 7(4), 459-477.
- Anderson, J. C., & Narus, J. A. (1990). A model of distributor firm and manufacturer firm working partnerships. the Journal of Marketing, 42-58.
- Antón, C., Camarero, C., & Carrero, M. (2007). Analysing firms' failures as determinants of consumer switching intentions: The effect of moderating factors. European Journal of Marketing, 41(1/2), 135-158.
- Aydin, S., & Özer, G. (2004). The analysis of antecedents of customer loyalty in the Turkish mobile telecommunication market. European Journal of Marketing, 39(7/8), 910-925.

- Aydin, S., Özer, G., & Arasil, Ö. (2005). Customer loyalty and the effect of switching costs as a moderator variable: A case in the Turkish mobile phone market. Marketing Intelligence & Planning, 23(1), 89-103.
- Babu, D. (2014). Why Kings Leave Their Kingdom-A Study on Switching Behavior of Customers and Factors Influencing This Behavioural Trait. International Journal of Management and Social Sciences Research Volume 3, No. 4, 9-13
- Bamberg, S., Ajzen, I., & Schmidt, P. (2003). Choice of travel mode in the theory of planned behavior: The roles of past behavior, habit, and reasoned action. Basic and applied social psychology, 25(3), 175-187.
- Bansal H. S. (1997). Service switching model: A model of customer switching behavior in the services industry. A thesis in partial fulfillment of the requirements for the degree of Ph. D. in Management, Queen's University Kingston.
- Bansal, H. S., & Taylor, S. F. (1999). The service provider switching model (spsm) a model of consumer switching behavior in the services industry. Journal of service Research, 2(2), 200-218.
- Bansal, H. S., Taylor, S. F., & James, Y. S. (2005). "Migrating" to new service providers: Toward a unifying framework of consumers' switching behaviors. Journal of the Academy of Marketing Science, 33(1), 96-115.
- Beerli, A., Martin, J. D., & Quintana, A. (2004). A model of customer loyalty in the retail banking market. European Journal of Marketing, 38(1/2), 253-275.
- Bell, M. (1980). Past mobility and spatial preferences for migration in East Africa.
- Bloemer, J., De Ruyter, K. O., & Wetzels, M. (1999). Linking perceived service quality and service loyalty: a multi-dimensional perspective. European Journal of Marketing, 33(11/12), 1082-1106.
- Boyle, P. Halfacree, Keith och Robinson, Vaughan (1998). Exploring contemporary migration.
- Bogue, D. J. (1969). Principles of demography. In Principles of demography. John Wiley and sons.
- Brennan, T. J. (2007). Consumer preference not to choose: methodological and policy implications. Energy policy, 35(3), 1616-1627.
- Brown, L. A., & Moore, E. G. (1970). The intra-urban migration process: a perspective. Geografiska Annaler. Series B, Human Geography, 52(1), 1-13.
- Buzzell, R. D., & Gale, B. T. (1987). The PIMS principles: Linking strategy to performance. Simon and Schuster.
- Buttle, F., & Burton, J. (2002). Does service failure influence customer loyalty?. Journal of Consumer Behaviour, 1(3), 217-227.

- Chumpitaz Caceres, R., & Paparoidamis, N. G. (2007). Service quality, relationship satisfaction, trust, commitment and business-to-business loyalty. European journal of marketing, 41(7/8), 836-867.
- Cadwallader, M. T. (1992). Migration and residential mobility: Macro and micro approaches. Univ of Wisconsin Press.
- Chiu, H. C., Hsieh, Y. C., Li, Y. C., & Lee, M. (2005). Relationship marketing and consumer switching behavior. Journal of Business Research, 58(12), 1681-1689.
- Clemes, M. D., Gan, C., & Zhang, D. (2010). Customer switching behaviour in the Chinese retail banking industry. International Journal of Bank Marketing, 28(7), 519-546.
- Cleveland, M., & Laroche, M. (2007). Acculturaton to the global consumer culture: Scale development and research paradigm. Journal of business research, 60(3), 249-259.
- Colgate, M., & Lang, B. (2001). Switching barriers in consumer markets: an investigation of the financial services industry. Journal of consumer marketing, 18(4), 332-347.
- Colgate, M., Tong, V. T. U., Lee, C. K. C., & Farley, J. U. (2007). Back from the brink: Why customers stay. Journal of Service Research, 9(3), 211-228.
- Colgate, M., & Hedge, R. (2001). An investigation into the switching process in retail banking services. International Journal of Bank Marketing, 19(5), 201-212.
- Cronin Jr, J. J., & Taylor, S. A. (1992). Measuring service quality: a reexamination and extension. The journal of marketing, 55-68.
- Cronin, J. J., Brady, M. K., & Hult, G. T. M. (2000). Assessing the effects of quality, value, and customer satisfaction on consumer behavioral intentions in service environments. Journal of retailing, 76(2), 193-218.
- De Ruyter, K., Wetzels, M., & Bloemer, J. (1998). On the relationship between perceived service quality, service loyalty and switching costs. International Journal of Service Industry Management, 9(5), 436-453.
- Defeuilley, C. (2009). Retail competition in electricity markets. Energy Policy, 37(2), 377-386.
- Desbarats, J. (1983). Spatial choice and constraints on behavior. Annals of the Association of American Geographers, 73(3), 340-357.
- Doney, P. M., & Cannon, J. P. (1997). An examination of the nature of trust in buyer-seller relationships. the Journal of Marketing, 35-51.
- Dorigo, G., & Tobler, W. (1983). Push–Pull Migration Laws. Annals of the Association of American Geographers, 73(1), 1-17.

- Du Toit, B. M. (1990). Rural-urban Migration with Special Reference to the Third World: Theoretical and Empirical Perspectives. Human Organization, 49(4), 305-319.
- Dyen, I. (1956). Language distribution and migration theory. Language, 611-626.
- Erdelyi, M. H. (1974). A new look at the new look: perceptual defense and vigilance. Psychological review, 81(1), 1.
- Erdogdu, E. (2010). Electricity Market Reform: Lessons for Developing Countries.
- Ergun and Gokmen (2013). Electricity regulation in Turkey: overview. Multi-Jurisdictional Guide 2013, Energy and Natural Resources.
- Eshghi, A., Haughton, D., & Topi, H. (2007). Determinants of customer loyalty in the wireless telecommunications industry. Telecommunications policy, 31(2), 93-106.
- European Comission Directorate - General for Health & Consumers (2010). Functioning of retail electricity markets for consumers in the European Union - Final Report. ECME Consortium.
- European Energy Regulators Group for Electricity & Gas (2010). ERGEG 2010 Status Review of the Liberalisation and Implementation of the Energy Regulatory Framework. Bruxelles.
- EY (2011a). The rise of smart customers - What consumers think.
- EY (2011b). The rise of smart customers - What sector thinks.
- EY (2014). Voice of the customer is getting louder.
- Finon, D., & Boroumand, R. H. (2011). Electricity retailers' competition: From survival strategies to oligopolistic behavior.
- Fischer, P. A., & Malmberg, G. (2001). Settled people don't move: On life course and (im−) mobility in Sweden. International Journal of Population Geography, 7(5), 357-371.
- Fredrickson, C., Heaton, T. B., Fuguitt, G. V., & Zuiches, J. J. (1980). Residential preferences in a model of migration intentions. Population and Environment, 3(3-4), 280-297.
- Fu, J. R. (2011). Understanding career commitment of IT professionals: Perspectives of push–pull–mooring framework and investment model. International Journal of Information Management, 31(3), 279-293.
- Gamble, A., Juliusson, E. A., & Gärling, T. (2009). Consumer attitudes towards switching supplier in three deregulated markets. The Journal of Socio-Economics, 38(5), 814-819.
- Ganesh, J., Arnold, M. J., & Reynolds, K. E. (2000). Understanding the customer base of service providers: an examination of the differences between switchers and stayers. Journal of marketing, 64(3), 65-87.

- Garbarino, E., & Johnson, M. S. (1999). The different roles of satisfaction, trust, and commitment in customer relationships. the Journal of Marketing, 70-87.
- Gardner, R. W. (1981). Macrolevel influences on the migration decision process.
- Ger, G. (1999). Localizing in the global village: Local firms competing in global markets. California Management Review, 41(4), 64.
- Gerpott, T. J., & Mahmudova, I. (2010). Determinants of green electricity adoption among residential customers in Germany. International Journal of Consumer Studies, 34(4), 464-473.
- Gerrard, P., & Barton Cunningham, J. (2004). Consumer switching behavior in the Asian banking market. Journal of Services Marketing, 18(3), 215-223.
- Goldscheider, C. (1971). Population, modernization, and social structure.
- Goldstein, S. (1976). Facets of redistribution: research challenges and opportunities. Demography, 13(4), 423-434.
- Greenwood, M. J. (1985). Human migration: Theory, models, and empirical studies. Journal of regional Science, 25(4), 521-544.
- Greenwood, M. J., Mueser, P. R., Plane, D. A., & Schlottmann, A. M. (1991). New directions in migration research. The Annals of Regional Science, 25(4), 237-270.
- Gremler, D. D., & Brown, S. W. (1996). Service loyalty: its nature, importance, and implications. Advancing service quality: A global perspective, 171-180.
- Gustafsson, A., Johnson, M. D., & Roos, I. (2005). The effects of customer satisfaction, relationship commitment dimensions, and triggers on customer retention. Journal of marketing, 69(4), 210-218.
- Hall, D., Thomas, S., & Corral, V. (2009). Global experience with electricity liberalisation.
- Hallowell, R. (1996). The relationships of customer satisfaction, customer loyalty, and profitability: an empirical study. International journal of service industry management, 7(4), 27-42.
- Hartmann, P., & Ibáñez, V. A. (2007). Managing customer loyalty in liberalized residential energy markets: The impact of energy branding. Energy Policy, 35(4), 2661-2672.
- Heberle, R. (1938). The Causes of Rural-Urban Migration a Survey of German Theories. American Journal of Sociology, 932-950.
- Hennig-Thurau, T., Langer, M. F., & Hansen, U. (2001). Modeling and Managing Student Loyalty An Approach Based on the Concept of Relationship Quality. Journal of Service Research, 3(4), 331-344.
- Hess, M., & Enric Ricart, J. (2003). Managing customer switching costs: a framework for competing in the networked environment. Management Research: Journal of the Iberoamerican Academy of Management, 1(1), 93-110.

- Hou, A. C., Chern, C. C., Chen, H. G., & Chen, Y. C. (2011). 'Migrating to a new virtual world': Exploring MMORPG switching through human migration theory. Computers in Human Behavior, 27(5), 1892-1903.
- Ibáñez, V. A., Hartmann, P., & Calvo, P. Z. (2006). Antecedents of customer loyalty in residential energy markets: Service quality, satisfaction, trust and switching costs. The Service Industries Journal, 26(6), 633-650.
- Jackson John A. (1986). Migration In Aspects of Modern Sociology: Social Processes. London and New York: Longman.
- Jones, M. A. (1998). Satisfaction and repurchase intentions in the service industry: the moderating influence of switching barriers.
- Jones, T. O., & Sasser, W. E. (1995). Why satisfied customers defect. Harvard Business Review, 73(6), 88.
- Joskow, P. (2008). Lessons learned from electricity market liberalization. The Energy Journal, 29(2), 9-42.
- Karan, M. B., & Kazdağli, H. (2011). The development of energy markets in Europe. In Financial Aspects in Energy (pp. 11-32). Springer Berlin Heidelberg.
- Keaveney, S. M. (1995). Customer switching behavior in service industries: An exploratory study. The Journal of Marketing, 71-82.
- Keaveney, S. M., & Parthasarathy, M. (2001). Customer switching behavior in online services: An exploratory study of the role of selected attitudinal, behavioral, and demographic factors. Journal of the academy of marketing science, 29(4), 374-390.
- Kim, H. S., & Yoon, C. H. (2004). Determinants of subscriber churn and customer loyalty in the Korean mobile telephony market. Telecommunications Policy, 28(9), 751-765.
- Kim, H. W., Gupta, S., & Lee, S. H. (2013). Examining the Effect of Online Switching Cost on Customers' Willingness to Pay More. Asia Pacific Journal of Information Systems, 23(1), 21-43.
- Kim J. (2008). An empirical analysis of consumers' switching decisions in the mobile service industry. A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy (Economics) at the University of Wisconsin-Madison.
- Kim, M. K., Park, M. C., & Jeong, D. H. (2004). The effects of customer satisfaction and switching barrier on customer loyalty in Korean mobile telecommunication services. Telecommunications policy, 28(2), 145-159.
- Kruglanski, A. W., & Klar, Y. (1985). Knowing what to do: on the epistemology of actions. In Action Control (pp. 41-60). Springer Berlin Heidelberg.

- Jones, M. A., Mothersbaugh, D. L., & Beatty, S. E. (2000). Switching barriers and repurchase intentions in services. Journal of retailing, 76(2), 259-274.
- Lai, F., Griffin, M., & Babin, B. J. (2009). How quality, value, image, and satisfaction create loyalty at a Chinese telecom. Journal of Business Research, 62(10), 980-986.
- Lai, J. Y., Debbarma, S., & Ulhas, K. R. (2012). An empirical study of consumer switching behaviour towards mobile shopping: a Push–Pull–Mooring model. International Journal of Mobile Communications, 10(4), 386-404.
- Lam, R., & Burton, S. (2006). SME banking loyalty (and disloyalty): a qualitative study in Hong Kong. International Journal of Bank Marketing, 24(1), 37-52.
- Lam, R., Burton, S., & Lo, H. P. (2009). Customer tradeoffs between key determinants of SME banking loyalty. International journal of bank marketing, 27(6), 428-445.
- Lam, S. Y., Shankar, V., Erramilli, M. K., & Murthy, B. (2004). Customer value, satisfaction, loyalty, and switching costs: an illustration from a business-to-business service context. Journal of the Academy of Marketing Science, 32(3), 293-311.
- Larsen, F. R. (2013). Implications of electricity sector liberalization on marketing decisions.
- Lee, E. S. (1966). A theory of migration. Demography, 3(1), 47-57.
- Lee, R., & Murphy, J. (2005). From loyalty to switching: exploring the determinants in the transition. In Proceedings of the Australia and New Zealand Marketing Academy Conference, Perth, Australia (pp. 196-203).
- Lewis, B. R., & Soureli, M. (2006). The antecedents of consumer loyalty in retail banking. Journal of consumer Behaviour, 5(1), 15-31.
- Li, X. R., & Petrick, J. F. (2008). Examining the antecedents of brand loyalty from an investment model perspective. Journal of Travel Research, 47(1), 25-34.
- Littlechild, S. (2014). Promoting or restricting competition?: Regulation of the UK retail residential energy market since 2008 (No. 1441). Faculty of Economics, University of Cambridge.
- Madden, T. J., Ellen, P. S., & Ajzen, I. (1992). A comparison of the theory of planned behavior and the theory of reasoned action. Personality and social psychology Bulletin, 18(1), 3-9.
- Massey, D. S., Arango, J., Hugo, G., Kouaouci, A., Pellegrino, A., & Taylor, J. E. (1994). An evaluation of international migration theory: the North American case. Population and development Review, 699-751.

- Matthews, C. D., Moore, C. I., & Wright, M. (2008). Why not switch? Switching costs and switching likelihood. In 13th Finsia and Melbourne Centre for Financial Studies Banking and Finance Conference, Melbourne, Australia (pp. 29-30).
- McHugh, K. E., Hogan, T. D., & Happel, S. K. (1995). Multiple Residence and Cyclical Migration: A Life Course Perspective. The Professional Geographer, 47(3), 251-267.
- Mittal, B., & Lassar, W. M. (1998). Why do customers switch? The dynamics of satisfaction versus loyalty. Journal of services marketing, 12(3), 177-194.
- Molinari, L. K., Abratt, R., & Dion, P. (2008). Satisfaction, quality and value and effects on repurchase and positive word-of-mouth behavioral intentions in a B2B services context. Journal of Services Marketing, 22(5), 363-373.
- Moon, B. (1995). Paradigms in migration research: exploring" moorings" as a schema. Progress in Human Geography, 19(4), 504-524.
- Morgan, R. M., & Hunt, S. D. (1994). The commitment-trust theory of relationship marketing. the journal of marketing, 20-38.
- Naumann, E., Haverila, M., Sajid Khan, M., & Williams, P. (2010). Understanding the causes of defection among satisfied B2B service customers. Journal of Marketing Management, 26(9-10), 878-900.
- Nordic Energy Regulators (2013). Nordic Market report 2013 - 6/2013.
- Ofgem (2013). State of the Market Assessment.
- Ofgem (2008). Energy Supply Probe - Initial Findings Report.
- Oliver, R. L. (1999). Whence consumer loyalty?. the Journal of Marketing, 33-44.
- Pakkanen, M. and Narva, T. (2011). Functioning of the Electricity Market in Finland – The Customer's Point of View. Report, Full Version, SGEM WP 5.
- Payne, A., & Frow, P. (1997). Relationship marketing: key issues for the utilities sector. Journal of Marketing Management, 13(5), 463-477.
- Pollitt, M. (2007). Liberalisation and Regulation in Electricity Systems: How can we get the balance right?.
- Pollitt, M. (2011). Energy Liberalisation in Historical Context. Economic Policy.
- Porell, F. W. (1982). INTERMETROPOLITAN MIGRATION AND QUALITY OF LIFE. Journal of Regional Science, 22(2), 137-158.
- Rauyruen, P., & Miller, K. E. (2007). Relationship quality as a predictor of B2B customer loyalty. Journal of business research, 60(1), 21-31.
- Ravenstein, E. G. (1885). The laws of migration. Journal of the Statistical Society of London, 167-235.
- Turkish Competition Authority (2015). Elektrik Toptan Satış ve Perakende Satış Sektör Araştırması.

- Richmond, A. H. (1988). Sociological theories of international migration: the case of refugees. Current Sociology, 36(2), 7-25.
- Roos, I. (1999). Switching processes in customer relationships. Journal of Service Research, 2(1), 68-85.
- Roos, I., & Gustafsson, A. (2007). Understanding frequent switching patterns. Journal of Service Research, 10(1), 93-108.
- Rust, R. T., & Zahorik, A. J. (1993). Customer satisfaction, customer retention, and market share. Journal of retailing, 69(2), 193-215.
- Schertzer S. M. B. (2006). The Influence of Quality on Business-to-Business (B2B). A dissertation submitted as part of the requirements for the degree of doctorate of philosophy in Business Administration (Marketing).
- Sell, R. R., & DeJong, G. F. (1978). Toward a motivational theory of migration decision making. Journal of Population, 1(4), 313-335.
- Sharma, N., & Patterson, P. G. (2000). Switching costs, alternative attractiveness and experience as moderators of relationship commitment in professional, consumer services. International journal of service industry management, 11(5), 470-490.
- Shields, G. M., & Shields, M. P. (1989). The emergence of migration theory and a suggested new direction. Journal of Economic Surveys, 3(4), 277-304.
- Sizer, L. M., & Smith, E. A. (1972). Toward an Integration of Migration and Location Theory.
- Speare, A. (1974). Residential satisfaction as an intervening variable in residential mobility. Demography, 11(2), 173-188.
- Stimson, R. J., & Minnery, J. (1998). Why people move to the'sun-belt': A case study of long-distance migration to the Gold Coast, Australia. Urban Studies, 35(2), 193-214.
- Thomas, J. S., Blattberg, R. C., & Fox, E. J. (2004). Recapturing lost customers. Journal of Marketing Research, 41(1), 31-45.
- Trlin, A. D. (1976). Toward the Integration of Factors affecting Immigrant Intra–Urban Residential Patterns. New Zealand Geographer, 32(1), 56-89.
- Turkish Electricity Generation Company (2013). Elektrik Üretim Sektör Raporu 2012.
- Turkish Energy Markets Regulatory Authority (2012). Turkish Energy Market:An Investor's Guide
- VaasaETT (2012a). European Residential Energy Price Report: Christophe Dromacque.
- VaasaETT (2012b). World energy retail market rankings. Customer switching research project, Helsinki: Lewis P. E., Brennan S., Kennedy D., Dromacque C.

- Walsh, G., Dinnie, K., & Wiedmann, K. P. (2006). How do corporate reputation and customer satisfaction impact customer defection? A study of private energy customers in Germany. Journal of Services Marketing, 20(6), 412-420.
- Walsh, G., Groth, M., & Wiedmann, K. P. (2005). An examination of consumers' motives to switch energy suppliers. Journal of Marketing Management, 21(3-4), 421-440.
- White, L., & Yanamandram, V. (2007). A model of customer retention of dissatisfied business services customers. Managing Service Quality: An International Journal, 17(3), 298-316.
- Wolpert, J. (1966). Migration as an adjustment to environmental stress. Journal of Social Issues, 22(4), 92-102.
- Ye, C., & Potter, R. (2011). The role of habit in post-adoption switching of personal information technologies: an empirical investigation. Communications of the Association for Information Systems, 28(1), 585-610.
- Zeithaml, V. A. (1988). Consumer perceptions of price, quality, and value: a means-end model and synthesis of evidence. The Journal of marketing, 2-22.
- Zeithaml, V. A., Berry, L. L., & Parasuraman, A. (1996a). The behavioral consequences of service quality. the Journal of Marketing, 31-46.
- Zeithaml, V. A., Bitner, M. J., & Gremler, D. D. (1996b). Services Marketing McGraw Hill. New York.
- Zengyan, C., Yinping, Y., & Lim, J. (2009). Cyber migration: An empirical investigation on factors that affect users' switch intentions in social networking sites. In System Sciences, 2009. HICSS'09. 42nd Hawaii International Conference on (pp. 1-11). IEEE.
- Zhang, K. Z., Cheung, C. M., & Lee, M. K. (2012). Online service switching behavior: The case of blog service providers. Journal of Electronic Commerce Research, 13(3), 184-197.
- Prime Ministry Privatization Administration (n. d.). Date retrieved: 12.05.2015, address: http://www.oib.gov.tr/tedas/tedas.htm

APPENDIX

Table 2: Studies that include service quality as a switching factor

switching attitude	**service quality** | *B2C:* Bansal (1997), Bansal and Taylor (1999)
switching intention	**service quality** | *B2C:* Anton et al. (2007), Babu (2014) *B2B & C:* Zeithaml et. al. (1996a) **service failure** | critical incident *B2C:* Anton et al. (2007)
switching decision	**product quality** | *B2C:* Kim (2008)
switching behaviour	**service quality** | *B2C:* Clemes et al. (2010) **service failure** | *B2C:* Colgate and Hedge (2001), Gerrard and Cunningham (2004), reactional triggers *B2C:* Roos and Gustafsson (2007), core service failure *B2C:* Keaveney (1995) **service recovery |** *B2C:* Colgate and Hedge (2001), Colgate and Lang (2001), response in service failure *B2C:* Keaveney (1995), service encounter failures *B2C:* Keaveney (1995) **breadth of services |** *B2C*: relationship breadth, number of subscriptions[1] *B2C:* Abdelrahmamn (2011), range of goods *B2C:* Roos (1999), value added services B2C: Makwana et al. (2014), service attributes (C)[2] *B2C:* Lewis and Soureli (2006) **convenience |** inconvenience *B2C*: Keaveney (1995), Gerrard and Cunningham (2004) number of bank branches *B2C:* distance *B2C:* Clemes et al. (2010) location *B2C:* Roos (1999)
behavioral intention	**service quality** *B2C:* Cronin et al. (2000) *B2B:* Schertzer (2006)
loyalty	**service quality** *B2C:* De Ruyter et al. (1998), Mittal and Lassar (1998), Bloemer et al. (1999), Aydin and Ozer (2004), Lewis and Soureli (2006) *B2B:* Lam and Burton (2006), Caceres and Paparoidamis (2007) **relationship quality | service quality** *B2B:* Rauyruen & Miller (2007) **quality of teaching[3]** *B2C:* Hennig-Thurau et al. (2001) **call quality** *B2C:* Kim and Yoon (2004) **service failure |** *B2C:* Buttle and Burton (2002) **service recovery |** *B2C:* Buttle and Burton (2002) **service attributes (C)[4]** B2C: Lewis and Soureli (2006) **Convenience |** service attributes (B)[3] *B2C:* Lewis and Soureli (2006)
repurchase intentions	**service quality** | *B2C:* Cronin and Taylor (1992) **service recovery** | *B2B:* White and Yanamandram (2007)
Intention to stay	**service quality** *B2B:* Lam et al. (2009)
reasons to stay	**service recovery** | *B2C:* Colgate et al. (2007)
retention	**relationship breadth** B2C: Gustafsson et al. (2005)

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[1] terms belong to banking industry

[2] Service attributes have measures covering a number of separate constructs representing (A)communication, (B)convenience, and (C)innovative products

[3] terms belong to education sector

[4] Service attributes have measures covering a number of separate constructs representing (A)communication, (B)convenience, and (C)innovative products

Table 3: Studies that include prior switching behavior as a switching factor

Switching behaviour	**prior switching behavior**	B2C: Thomas et al. (2004)[5]
Loyalty	**prior switching behavior**	B2C: Ganesh et al. (2000)[6] **length of business relationship**	B2B: Lam and Burton (2006)
Retention	**prior churn**	B2C: Gustafsson et al. (2005)

Table 4: Studies that include satisfaction as a switching factor

Switching intention	**satisfaction**	B2C: Bansal (1997), Bansal and Taylor (1999), Walsh et al. (2005), Walsh et al. (2006)
Switching behaviour	**satisfaction**	*B2C*: Keaveney and Parthasarathy (2001)[7] , Kim and Yoon (2004)
Behavioral intention	**satisfaction**	*B2C*: Cronin et al. (2000)
Loyalty	**satisfaction**	*B2C*: Rust and Zahorik (1993), Jones and Sasser (1995), Gremler and Brown (1996), Mittal and Lassar (1998), Oliver (1999), Beerli et al. (2004), Buttle and Burton (2002), Hennig-Thurau et al. (2001), Ball et al. (2004), Kim et al. (2004), Aydin et al. (2005), Lewis and Soureli (2006), Eshghi et al. (2007), Li and Petrick (2008), Lai et al. (2009), Ibáñez et al. (2006), Hartmann and Ibanez (2007) *B2B*: Lam et al. (2004) **satisfaction (in relationship quality)** *B2B*: Rauyruen & Miller (2007) **relationship satisfaction**	*B2B*: Caceres and Paparoidamis (2007)
Repurchase intentions	**satisfaction**	*B2C*: Cronin and Taylor (1992), Jones (1998 *B2B*: Patterson and Spreng (1997)
Repurchase behavior	**satisfaction**	*B2B*: Molinari et al. (2008)
Retention	**satisfaction**	*B2C*: Gustafsson et al. (2005)

Table 5: Studies that include value as a switching factor

Behavioral intention	**value**	B2C: Cronin et al. (2000)
Loyalty	**value**	B2C: Buttle and Burton (2002), Chiu et al. (2004), Lewis and Soureli (2006), Lai et al. (2009) *B2B:* Lam et al. (2004)
Repurchase intentions	**value**	B2B: Patterson and Spreng (1997)
Repurchase behavior	**value**	B2B: Molinari et al. (2008)

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[5] Authors study the the probability of a firm reacquiring a customer according to the lapse duration

[6] Authors don't directly mention the related construct as a factor, but group customers accordingly and identify their differences

[7] Authors don't directly mention the related construct as a factor, but group customers accordingly and identify their differences

Table 6: Studies that include trust as a switching factor

switching behaviour	**reputation** | B2C: Clemes et al. (2010) **ethical problems** | B2C: Keaveney (1995)
loyalty	**trust** | B2C: Ball et al. (2004), Aydin & Özer (2004), Aydin et al. (2005), Lewis & Soureli (2006), Ibáñez et al. (2006) B2B: Caceres & Paparoidamis (2007) **brand trust** | B2C: Hartmann and Ibanez (2007) **confidence benefits** | B2C: Hennig-Thurau et al. (2001) **trust (in relationship quality)** *B2C:* Hennig-Thurau et al. (2001) B2B: Rauyruen & Miller (2007)
anticipated future interaction	**trust of supplier** | B2B: Doney and Cannon (1997) **trust of sales- person** | B2B: Doney and Cannon (1997)
reasons to stay	**confidence** | B2C: Colgate et al. (2007)

Table 7: Studies that include commitment as a switching factor

switching intention	**commitment** | *B2C:* Anton et al. (2007)
loyalty	**commitment** | *B2C:* Hennig-Thurau et al. (2001) *B2B:* Caceres and Paparoidamis (2007) **emotional commitment (in relationship quality)** | *B2C:* Hennig-Thurau et al. (2001) **commitment (in relationship quality)** | *B2B:* Rauyruen & Miller (2007)
retention	**commitment** | *B2C:* Gustafsson et al. (2005)

Table 8: Studies that include attitude and subjective norms as a switching factor

switching attitude	**subjective norms** *B2C:* Bansal (1997), Bansal and Taylor (1999)
switching intention	**attitude towards switching / subjective norms** *B2C:* Bansal (1997), Bansal and Taylor (1999)

Table 9: Studies that include influential triggers as a switching factor

Switching behaviour	**influential triggers** | B2C: Roos and Gustafsson (2007) **advertisement** | B2C: Clemes et al. (2010)

Table 10: Studies that include price as a switching factor

switching attitude	**expected economic benefits** | B2C: Gamble et al. (2009)
switching intention	**price changes** | B2C: Anton et al. (2007)
switching decision	**price** | B2C: Kim (2008)
switching behaviour	**price** | B2C: Roos (1999), Thomas et al. (2004), Clemes et al. (2010) **pricing** | B2C: Keaveney (1995), Gerrard and Cunningham (2004), Makwana et al. (2014) **pricing problems** | B2C: Colgate and Hedge (2001) **interest rate**[8] **|** B2C: Abdelrahmamn (2011)
loyalty	**price** | B2B: Naumann et al. (2010)

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[8] terms belong to banking industry

Table 11: Studies that include alternative attractiveness as a switching factor

Switching behaviour	**attraction by competitors** | B2C: Keaveney (1995) **apathy (B)**[9] **|** B2C: Colgate and Lang (2001)
Loyalty	**quality of alternative options** | B2C: Li and Petrick (2008) **better service** | B2B: Naumann et al. (2010)
Repurchase intentions	**attractiveness of alternatives** | B2B: White and Yanamandram (2007)
Reasons to stay	**alternatives** | B2C: Colgate et al. (2007)

Table 12: Studies that include segment focus as a switching factor

Behavioral intention	**image - industry knowledge** | B2B: Schertzer (2006) **image - customer focus and expertise** | B2B: Schertzer (2006)

Table 13: Studies that include variety seeking as a switching factor

Switching behaviour	**variation** B2C: Roos (1999)
Repurchase intentions	**inertia (B)**[10] B2B: White and Yanamandram (2007)

Table 14: Studies that include switching costs as a switching factor

switching attitude	**information search costs** | B2C: Gamble et al. (2009)
switching decision	**switching costs |** B2C: Kim (2008)
switching behaviour	**switching costs |** B2C: Kim (2008), Matthews et al. (2008)[11], Clemes et al. (2010) **relationship investment (A)** [12] | B2C: Colgate and Lang (2001) **duration of the introductory rate** [13] | B2C: Abdel-rahmamn (2011) **apathy (A)**[14] | B2C: Colgate and Lang (2001) **negativity** | B2C: Colgate and Lang (2001)
loyalty	**switching costs |** B2C: Gremler and Brown (1996), De Ruyter et al. (1998), Beerli et al. (2004), Aydin and Özer (2004), Aydin et al. (2005), Ibáñez et al. (2006), Hartmann and Ibanez (2007 B2B: Lam et al. (2004) **investment in the relationship** | B2C: Li and Petrick (2008)
repurchase intentions	**switching costs |** B2C: Jones et al. (2000) B2B: White and Yanamandram (2007) **inertia (A)**[15] | B2B: White and Yanamandram (2007)

[9] Apathy has two measures; (A) relating to switching costs and (B) relating to attractiveness of alternatives

[10] White and Yanamandram (2007) define two dimensions of inertia: "(A) Inertia as the outcome, the customer thinks that the alternatives are unattractive due to switching costs), (B) Inertia as a behavioural characteristic defined as "the customer is lazy, inactive, or passive"

[11] Matthews et al. (2008) found out that "switching costs on the relationship between a person's desire to switch banks and the likelihood that they will actually do so", however in the table it is located under switching behaviour column for the sake of the presentation

[12] Relationship investment has two parts of measures; A relating to switching costs and B relating to social bonds

[13] terms belong to banking industry

[14] Apathy has two measures; (A) relating to switching costs and (B) relating to attractiveness of alternatives

[15] White and Yanamandram (2007) define two dimensions of inertia: "(A) Inertia as the outcome, the customer thinks that the alternatives are unattractive due to switching costs), (B) Inertia as a behavioural characteristic defined as "the customer is lazy, inactive, or passive"

| retention | **switching costs |** B2C: Hess and Ricard (2003) |
| reasons to stay | **switching costs |** B2C: Colgate et al. (2007) **time and effort** |B2C: Colgate et al. (2007) |

Table 15: Studies that include social bonds as a switching factor

switching intention	**relational bonds**	B2B: Lam et al. (2009)
switching behaviour	**relationship investment (B)**[16] **|** B2C: Colgate and Lang (2001)
loyalty	**Inter-personal bonds**	B2C: Gremler and Brown (1996) **special treatment**	B2C: Gremler and Brown (1996) **special treatment benefits**	B2C: Hennig-Thurau et al. (2001) **social benefits**	B2C: Hennig-Thurau et al. (2001) **personnel**	B2C: Roos (1999)
repurchase intentions	**interpersonal relationships** B2B: White and Yanamandram (2007)
reasons to stay	**social bonds**	B2C: Colgate et al. (2007) **emotional bonds** B2C: Colgate et al. (2007)

Table 16: Studies that include image as a switching factor

Loyalty	**image**	B2C: Lewis and Soureli (2006) **brand image**	B2C: (Kim and Yoon (2004) **corporate image**	B2C: Aydin and Özer (2004)

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[16] Relationship investment has two parts of measures; A relating to switching costs and B relating to social bonds