Shariah Compliance Status and Value of Analysts' Recommendation Revisions: Evidence from Malaysia

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Abstract

This study examines the effect of 1096 analyst recommendation revisions on prices of Shariah-compliant and Shariah non-compliant listed securities in Bursa Malaysia over the period 2005-2016. The study finds that while stocks added-to-buy had positive abnormal returns, the stocks added-to-sell and remove-from-buy had negative abnormal returns in short- and long-term horizons. This finding shows that analysts' recommendation revisions carry valuable information. Secondly, the study examined the effect of analysts' recommendation revisions issued contemporaneously with earnings announcements and without earnings announcements on price reactions over various time horizons. The results show that earnings announcements can trigger analysts' recommendation revisions because the investors react strongly to analysts' recommendation revisions issued contemporaneously with earnings announcements. We find that performance differences of Shariah-compliant and Shariah non-compliant stocks in response to analysts' recommendation revisions are often negligible. Overall, this study provides empirical evidence that analysts' recommendation revisions for Shariah-compliant companies often do not own any additional investment value than those for Shariah non-compliant stocks.

Keywords: Analysts, Forecasts, Revisions, Earnings, Islamic finance, Shariah-compliant stocks, Malaysia

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Introduction

For decades researchers have investigated price reactions to changes in analysts' recommendations. The universal finding is that the recommendation revisions predict future short-term and long-term returns in the same direction as the change. Short-term price reaction is associated with the role of analysts to facilitate market efficiency and price formation while a long-term abnormal return which is known as post-revision return drift (PRD) is related to slow adjustment of price and neglected public information in the inefficient market (Givoly & Lakonishok, 1979; Gleason & Lee, 2003; Hong, Lim, & Stein, 2000; Jegadeesh, Kim, Krische, & Lee, 2004; Womack, 1996).

Equity analysts play essential roles in examining publicly available financial data about firms and convey the information of earnings estimation to retail investors and institutions. To increase the number of analyst coverage for listed companies and facilitate price formation and improve market efficiency in Malaysia, Bursa Malaysia and Capital Market Development Fund (CMDF) had established the CMDF-Bursa Research Scheme (CBRS) in 2005. Thus, investors had gained free access to a large number of analysts' recommendation revisions (see Figure 1).

Figure 1: The Number of Analysts' Recommendation Revisions in the CBRS
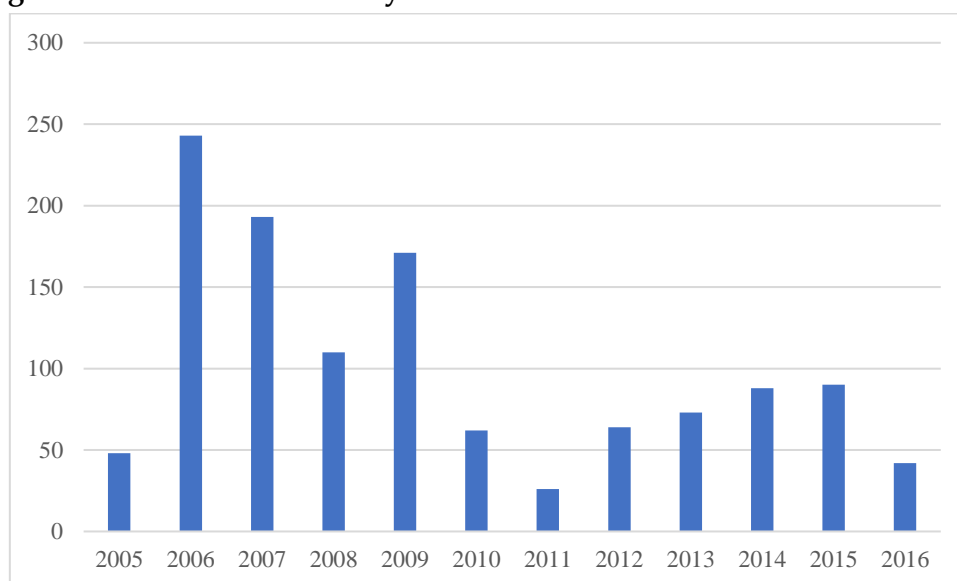
Source: Bursa Malaysia

Recently, investors and analysts went beyond traditional valuation tools by integrating extra-financial information into investment strategy and financial analysis (Bennani et al., 2018). Initially, researchers analyzed how corporate social responsibility affects analysts' assessments of firms' future financial performance (Ioannou & Serafeim, 2010). Later, integrating environmental, social and governance (ESG) factors into financial analysis have been considered as a more precise tool to estimate the long-term performance of companies

since ESG issues can decrease the weighted average cost of capital (WACC) and increasing Return on Invested Capital (ROIC) of companies (Elber, 2008). A strand of literature attempted to uncover the link between Corporate social performance (CSR) and corporate financial performance (CFP) and the correlation of CSR and CFP was often non-negative (Barnett & Salomon, 2006; Clark, Feiner, & Viehs, 2014; Friede, Busch, & Bassen, 2015; Hillman & Keim, 2001; Margolis & Walsh, 2003; McWilliams & Siegel, 1997; Orlitzky, Schmidt, & Rynes, 2003). Along the same line, few studies demonstrated that there is a positive relation between analysts' recommendations and the ESG factor (Ioannou & Serafeim, 2010; Mimouni, Smaoui, Temimi, & Al-Azzam, 2019). Although few prior works (Farooq, 2014; Sabrun, Muhamad, Yusoff, & Darus, 2018) attempted to uncover the link between Shariah compliance and financial performance, there is still a significant need for efforts to understand such intricate relation and its implications by conducting further studies. Thus, this study aims to analyze whether investors react to analysts' recommendation revisions for Shariah-compliant stocks differently from Shariah non-compliant stocks.

The main objective of this study is to understand the impact of analyst recommendations participating in the financial analysts' coverage incentive scheme over the listed firms in Malaysia. More particularly, the study aims to compare the price reactions of Shariah non-compliant and Shariah-compliant firms in Malaysia in response to analysts' recommendation revisions. Finally, the study aims to explore whether analyst recommendations in Malaysia piggyback on the news related to financial results of corporations or not and how prices of Shariah non-compliant and Shariah-compliant firms in Malaysia react to analysts' recommendation revisions. Based on the research objectives mentioned above the following four research hypotheses to are going to be addressed in this study:

H1. Analysts' recommendation revisions lead to price reactions in short-term horizons and long-term horizons.

H2. Price reactions for Shariah-compliant stocks subsequent to analysts' recommendation revisions are stronger than Shariah non-compliant stocks in short-term horizons and long-term horizons.

H3. Analysts' recommendation revisions which are issued contemporaneously with earnings announcements lead to stronger price reactions in short-run stock returns and long-run stock returns.

H4. Price reactions for Shariah-compliant stocks subsequent to analysts' recommendation revisions which are issued contemporaneously with and without earnings announcements are stronger than Shariah non-compliant stocks in short-term horizons and long-term horizons.

This study contributes to the extant literature by attempting to fill several important gaps in the literature. To our knowledge, there is very limited research that examined the impact of financial analysts' coverage in the Malaysian stock market. Thus, we contribute to the

literature by examining the impact of the incentive scheme of financial analysts' coverage in Bursa Malaysia within different time horizons by using a large dataset. Secondly, we analyze how analyst recommendation revisions related to earnings announcements affect stock price reactions in Bursa Malaysia and whether analyst recommendations beyond earnings announcements cause significantly different price reactions. Thirdly, the study investigates whether analyst recommendation revisions cause greater price reactions for Shariah-compliant stocks to understand whether Shariah criteria as extra-financial information affect investor behavior and financial performance of Shariah-compliant firms.

The rest of this paper is set out as follows. Section 2 provides a review of analyst recommendation studies. Section 3 sets out model estimations and methodology. Section 4 is dedicated to a discussion of empirical results. Section 5 presents conclusions whereas the paper concludes with Section 6 where we present policy recommendations.

1. Literature Review

Equity analysts play a significant role in collecting and processing publicly available information about firms and disseminating that information to retail investors and institutions. Analysts provide forecasts of earnings and stock recommendations based on their private research and own valuation models. Many investors believe analysts' reports embody valuable information, so they are willing to pay millions of dollars annually to have access to analysts' earnings forecast and recommendation data from vendors such as First Call and I/B/E/S.

For decades researchers have investigated average abnormal returns after analysts change their recommendations for buying and selling stocks. The universal finding is that the recommendation revisions predict future short-term and long-term returns in the same direction as the change. In other words, upgrades are followed by positive returns while downgrades are followed by negative returns. Lloyd-Davies and Canes (1978) show that investors react to analyst recommendations by causing to average abnormal stock price performance on the day of publication of analysts' recommendations in the "Heard on the Street" column of the Wall Street Journal. Elton et al. (1986) and Womack (1996) documented that buy (sell) recommendations tend to cause cumulative averaged abnormal return (loss) following one to six months of the day of the announcement. The findings of Barber et al. (2001) confirm the previous studies regarding the return forecasting power of analyst recommendations. Short-term price reaction is associated with the role of analysts to facilitate market efficiency and price formation while a long-term abnormal return which is known as post-revision return drift (PRD) is related to slow adjustment of price and neglected public information in the inefficient market (Givoly & Lakonishok, 1979; Gleason & Lee, 2003; Hong et al., 2000; Jegadeesh et al., 2004; Womack, 1996).

Almost three-quarters of analyst recommendation revisions in Bursa Malaysia's Research Scheme take place within one week after earnings announcements. The concentration of

recommendation revisions posits that analysts' valuation significantly changes in response to the newly available information. Many studies highlight the role of earnings announcements over analyst recommendations and investigate whether analyst recommendations have any information value for investors. Ivkovic and Jegadeesh (2004) suggest that the timing of recommendation revisions related to earnings announcements has a significant effect on the abnormal return of stocks. Menéndez-Requejo (2005) found that an abnormal return of 0.5% is observed before the publication of buy recommendations, but there is not significant abnormal return after that the information-related buy recommendation is published. The same study observes an abnormal loss of 0.77% three days before the release of publication following sell recommendations. Altınkılıç and Hansen (2009) documents that the analyst recommendation revisions by downgrading or upgrading stocks are information-free. In other words, the stock prices often react to corporate events and related news, and they react to analyst recommendations if it is related to the announcement of any financial result. Yezegel (2015) shows that almost a quarter of sell-side analyst recommendation revisions took place within the three days after earnings announcements and found that stock prices react more to recommendation revisions related to recent earnings announcements.

Recently, investors and analysts went beyond traditional valuation models by using various extra-financial information of a company to calculate its financial value. ESG issues such as corporate governance, human rights, occupational health and safety, innovation, research and development (R&D), customer satisfaction, climate change, and natural resource management can have a short, medium, and long-term effect on business performance. According to a joint survey of Euronext (2003), 79% of fund managers and analysts 388 fund managers and financial analyst responded that social management creates positive value for a firm in the long term while 50% of investors use corporate information on social and environmental performance as input during investment decision. According to A4S, GRI, and Radley Yeldar (2012), over 80% of their research sample believe that extra-financial information is very relevant or relevant in their investment decision-making and company analysis. Friede, Busch, and Bassen (2015) reviewed more than 2000 empirical studies which investigated the relationship between ESG issues and CFP. Roughly 90% of studies showed that ESG–CFP relation is non-negative. More importantly, most studies documented positive ESG–CFP relations and the positive impact of ESG is more stable over time.

Considering the growing number of studies on ESG-CFP relation, many studies attempted to understand how the relation between CSP (or ESG) and CFP can influence analyst recommendations (Hinze & Sump, 2019; Liang & Renneboog, 2020). Luo et al. (2015) find that there is a positive association between firm CSP and analyst recommendations. In other words, analysts incorporate CSP information to prepare equity reports when they recommend buying or selling stocks for general investors. On the other hand, Ioannou and Serafeim (2010) show that analysts tend to downgrade their recommendations for firms with higher ESG scores, yet this pessimism gradually vanished. Alazzani, Wan-Hussin, Jones, and Al-hadi (2021) also conclude that there is a positive link between analysts' recommendations and ESG

disclosure in the middle east. Similarly, Yuan Chang, Chen, Chou, and Shen (2014) show that superior CSR performance is associated with a higher percentage of hold recommendations.

Although there is an increasing number of studies on the relation between analysts' recommendations and ESG issues, there are limited studies that focus on the link between Shariah criteria as extra-financial information and CFP, and how investors react to analysts' recommendation revisions for Shariah-compliant stocks. Al-Khazali et al. (2014) found that the European, US, and global Islamic stock indexes perform better than conventional ones during the 2007–2012 period. Along the same line, Lean and Parsva (2012) documented that Islamic indexes in Malaysia have earned a higher return than the investment at the same level of risk. Farooq (2014) argues that information disclosure of Shariah-compliant firms which have low leverage, low account receivables, and low cash and interest-bearing securities, should have better performance than Shariah non-compliant firms. Therefore, a better disclosure environment of Shariah-compliant firms improves the ability of analysts to make profitable recommendations, yet the study found that analysts are not able to make any value-relevant recommendations for Shariah-compliant firms. Sabrun et al. (2018) found that although Islamic principles and values encourage ethical behavior in business management, the empirical analysis showed that Shariah-compliant firms in Malaysia did not deter earnings management behavior. Thus, satisfying Shariah screening criteria determined by financial regulatory bodies or ETF fund managers does not guarantee that a company and its management follow Islamic principles and values in all aspects of its business management and practices. In other words, a Shariah-compliant firm may create unfavorable environmental and social impacts and have poor corporate governance while it is still able to meet Shariah screening criteria based on its financial ratios and business activities.

Fatema et al. (2013) suggest that Shariah compliance helps the Islamic Brands identifiable and increases the reputation of firms. According to Euronext (2003), many analysts also indicate that they would grant a stock price premium to socially responsible activities and company reputation. Moreover, Muslim retail and Islamic institutional investors are less likely to react to analyst recommendations for buying or selling Shariah non-compliant stocks since Islam put a restriction of investing into stocks of a company which involves in forbidden business activities (McCullough & Willoughby, 2009). Therefore, Muslim retail investors and Islamic financial institutions can cause higher pressure to buy and sell Shariah-compliant stocks in line with the Price Pressure Hypothesis (PPH) of Harris and Gurel (1986) and the Imperfect Substitutes Hypothesis (ISH) of Shleifer (1986).

2. Data and Methodology

2.1. Data and Sample Selection

We use 1096 analyst recommendation revisions to understand whether they cause price reactions for listed securities between 1 May 2005 and 31 November 2016. In our sample, there are 320 stocks Added-to-Buy, 348 stocks Removed-from-Buy, 254 stocks Added-to-Sell, and 174 stocks Removed-from-Sell during this period. Out of 1096 recommendation revisions,

there are revised recommendations for 979 Shariah-compliant stocks and 117 Shariah non-compliant stocks.

Additionally, we want to analyze the impact of analyst recommendations related to and outside the earnings announcements. Therefore, the research also uses two sub-sample categories which are suggested by many previous empirical studies (Ivkovic & Jegadeesh, 2004; Loh & Stulz, 2009; Menéndez-Requejo, 2005), namely the result reports and update reports for each list changes category. Thus, our sample has eight categories of events, namely Added-to-Buy with earnings announcements, Added-to-Buy without earnings announcements, Removed-from-Buy with earnings announcements, Removed-from-Buy without earnings announcements, Added-to-Sell with earnings announcements, Added-to-Sell without earnings announcements, Removed-from-Sell with the earnings announcement, and Removed-from-Sell without earnings announcement. In our sample, there are 222 stocks Added-to-Buy with earnings announcements, 98 stocks Added-to-Buy without earnings announcements, 280 stocks Removed-from-Buy with earnings announcements, 68 stocks Removed-from-Buy without earnings announcements, 204 stocks Added-to-Sell with earnings announcements, 50 stocks Added-to-Sell without earnings announcements, 134 stocks Removed-from-Sell with the earnings announcement, and 40 stocks Removed-from-Sell without earnings announcement.

Table 1: Description of Analysts' Recommendation Revisions, Result and Update Reports

Sample Category	Sample Sub-Category	Number of Obs in Final Sample	Date Range of Sample
Added-to-Buy List Changes	Total	320	Jun. 2005 - Aug. 2016
	Result Reports	222	Jun. 2005 - Aug. 2016
	Updates Reports	98	Jun. 2005 - Aug. 2016
Removed-from-Buy List Changes	Total	348	May. 2005 - Nov. 2016
	Result Reports	280	May. 2005 - Nov. 2016
	Updates Reports	68	May. 2005 - Nov. 2016
Added-to-Sell List Changes	Total	254	Sep. 2005 - Nov. 2016
	Result Reports	204	Sep. 2005 - Nov. 2016
	Updates Reports	50	Jan. 2006 - Sep. 2016
Removed-from-Sell List Changes	Total	174	May. 2005 - Aug. 2016
	Result Reports	134	May. 2005 - Aug. 2016
	Updates Reports	40	Feb. 2006 - Mar. 2016

The dataset consists of information on the submission dates of analyst recommendation reports, types of reports, and prices of listed companies in Bursa Malaysia. The sample of analysts' recommendation revisions, event dates, and daily prices of the stocks is obtained from Malaysia Research Repository of Bursa Malaysia and Thomson Reuters Eikon financial database to conduct our empirical analysis.

2.2. Methodology

2.2.1. Univariate Analysis

For testing research hypotheses H1 and H3, we use a standard event study methodology and market model to investigate the impact of analyst recommendation revision on prices of upgraded and downgraded stocks (Brown & Warner, 1985). Event Study Metrics estimates the model parameters by ordinary least squares (OLS) regressions based on estimation-window observations as follow;

$$R_{i,t} = \alpha_i + \beta_i R_{m,t} + \varepsilon_{i,t} \quad with \ E(\varepsilon_{i,t}) = 0 \ and \ Var(\varepsilon_{i,t}) = \sigma^2_{\varepsilon_i} \qquad (1)$$

wherein the case of the first day after the event, $R_{i,t}$ is the return of security i at the time t while $R_{m,t}$ is the return of market portfolio at the time t. While α_i is the intercept for the security i, β_i is the slope of the coefficient for security i and $\varepsilon_{i,t}$ is the residual for security i at the time t.

The OLS regression analysis estimates the parameter $\hat{\alpha}$ and $\hat{\beta}$ from the (Equation (1)) by using observation of $R_{i,t}$ and $R_{m,t}$ over event window period and then, we calculate the expected return of each security i $(\widehat{R_{i,t}})$ by using the return of the market portfolio ($R_{m,t}$).

$$\widehat{R_{i,t}} = \hat{\alpha} + \hat{\beta} R_{m,t} \qquad (2)$$

After calculating the expected returns for each security i at the time t $(\widehat{R_{i,t}})$ from equation (2), the abnormal return is calculated. We obtain the abnormal return for security i at the time t $(AR_{i,t})$ by calculating the difference between a security's actual returns and the expected returns (Equation (3)).

$$AR_{i,t} = R_{i,t} - (\hat{\alpha} + \hat{\beta} R_{m,t}) \qquad (3)$$

The average abnormal return (AAR_t) is calculated by the sum of abnormal return for all securities j divided by the number of securities N (Equation (4)). The average abnormal return (AAR) for securities is used to measure the excess return movement of all stock on time t.

$$AAR_t = \frac{1}{N} \sum_{j=1}^{N} AR_{j,t} \qquad (4)$$

The average abnormal returns are summed over the event window to obtain a cumulative average abnormal return $CAAR_{i,t}$ for each time horizon from the day 'i' to 'T'(Equation (5)).

$$CAAR_{i,t} = \sum_{t=i}^{T} AAR_t \qquad (5)$$

Most studies suggest between 30 days and 100 days as the length of the estimation window (Bildik & Gülay, 2008; Cox & Peterson, 1994; Yazi, Morni, & Saw, 2015). Therefore, we define the estimation window from 60 trading days before the announcement date (AD-60) to 6 trading days before announcement day (AD-6) as the event window of (-60, -6) in both studies.

The study conducts an estimation window for calculating abnormal returns for the following event windows;

Announcement day (AD): If there is no anticipation for analyst recommendation revision, it is expected that investors cause abnormal returns for listed securities on the announcement day as a result of the information effect. According to the efficient market hypothesis (EMH), all information is immediately incorporated into prices by investors. In other words, EMH suggests that price reacts to the release of new information only during the announcement day.

Short-Term Post-announcement period (from AD+1 to AD+5): The study examines the CAARs for event windows of (0, 1), (0, 2), (0, 3), (0, 4), and (0, 5) to understand whether investors react to new information in short-term since sometimes it can take few days for the market to incorporate new information into stock prices as shown by studies of Altınkılıç and Hansen (2009) and Yezegel (2015).

Long-Term Post-announcement period (from AD+10 to AD+60): Later, the research analyses the CAARs for event windows of (0, 10), (0, 20), (0, 40), and (0, 60) to understand whether eventually, a price reversal occurs, or abnormal return is permanent.

2.2.2. Multivariate Analysis

For testing research hypotheses H2, the study used the following econometric model to capture the impact of analyst recommendation revisions on four different categories of revisions and to test whether it has a significant effect on Shariah non-compliant stocks.

$$CAR_{j,i,t} = \beta_1 AB_{j,t} + \beta_2 RB + \beta_3 AS_{j,t} + \beta_4 RS_{j,t} + (\beta_5 AB_{j,t} + \beta_6 RB_{j,t} + \beta_7 AS_{j,t} + \beta_8 RS_{j,t}) \times SN_{j,t} + \varepsilon_{i,t} \qquad (6)$$

where Individual Cumulative Abnormal Return variable is denoted as $CAR_{j,i,t}$. We have four dummy variables for analysts' recommendation revisions, namely Added-to-Buy recommendation (AB_j), Removed-from-Buy recommendations (RB_j), Added-to-Sell

recommendations (AS_j), Removed-from-Sell recommendations (RS_j). Plus, we use one dummy variable for Shariah non-compliant stocks (SN_j).

Many studies show that recommendation revisions are often more concentrated after earnings announcements when there is greater mispricing and when it is harder for analysts to obtain information from alternative sources (Ivkovic & Jegadeesh, 2004; Altınkılıç & Hansen, 2009; Yezegel, 2015). Therefore, investigating analyst recommendation revisions related to and beyond earnings announcements as control variables would enhance the univariate analysis and provide a more in-depth understanding of the impact of analyst recommendation revisions over Shariah non-compliant stocks.

For testing research hypotheses H4, the study employed the following equation to capture the impact of analyst recommendation revisions over four different categories of revisions with two sub-categories related to earnings announcements for each type of recommendation revision, and we test whether it has a significantly different effect for Shariah non-compliant stocks.

$$CAR_{j,i,t} = \beta_1 ABe_{j,t} + \beta_2 ABw_{j,t} + \beta_3 RBe_{j,t} + \beta_4 ARBw_{j,t} + \beta_5 ASe_{j,t} + \beta_6 ASw_{j,t} + \beta_7 RSe_{j,t} + \beta_8 RSw_{j,t} + \tag{7}$$

$$(\beta_9 ABe_{j,t} + \beta_{10} ABw_{j,t} + \beta_{11} RBe_{j,t} + \beta_{12} RBw_{j,t} + \beta_{13} ASe_{j,t} + \beta_{14} ASw_{j,t} + \beta_{15} RSe_{j,t} + \beta_{16} RSw_{j,t}) \times SN_{j,t} + \varepsilon_{i,t}$$

We have eight dummy variables for analysts' recommendation revisions, namely Added-to-Buy recommendation with earnings announcement (ABe_j), Added-to-Buy recommendation without earnings announcement (ABw_j), Removed-from-Buy recommendations with earnings announcement (RBe_j), Removed-from-Buy recommendations without earnings announcement (RBw_j), Added-to-Sell recommendations with earnings announcement (ASe_j), Added-to-Sell recommendations without earnings announcement (ASw_j), Removed-from-Sell recommendations with earnings announcement (RSe_j), Removed-from-Sell recommendations without earnings announcement (RSw_j).

3. Results

3.1. Abnormal Return

The empirical results exhibit that the CAARs of stocks removed-from-buy and stocks added-to-sell are -0.53% and -1.35% respectively on the announcement day (0, 0). In the short-term event window of five trading days (0, +5), the CAARs of stocks removed-from-buy and stocks added-to-sell are -1.8% and -3.74%. On the other hand, the CAARs of stocks added-to-buy increased to 0.73% and 1.85% at 0.01 significance level in the event windows of (0, 0) and (0, +5). Table 2 documents that the CAARs of stocks removed-from-buy and added-to-sell are -3.51% and -3.90% in one-month (0, +20) event window while the CAARs of both categories of stocks respectively decreased to -7.13% and -5.71% at 0.01 significance level in three-month

(0, +60) event window. On the other hand, stocks added-to-buy increased to 2.23% and 5.81% at 0.01 significance level in one-month (0, +20) and three-month (0, +60) event windows. However, the empirical results suggest stocks removed-from-sell are not significant in the short term and the long term.

Both stocks removed-from-buy and added-to-sell had abnormal loss significantly in the short-term and long term during post-recommendation revisions while the CAARs of stocks added-to-buy are significant and positive in the short-term and long-term. These findings have an important implication that analysts' recommendation revision announcements are not information-free on average and our results are consistent with many previous studies such as Elton et al. (1986), Womack (1996), and Chang and Chan (2008). According to Grossman (1976) and Grossman and Stiglitz (1980), information is rarely perfect, and thus, economic agents can improve information efficiency through making profiting from costly information discovery and reflecting their information into security prices. Along the same line, immediate reactions to analysts' recommendation revisions are direct evidence to support the expanded definition of market efficiency of Grossman and Stiglitz (1980).

In the long term, the cumulative average abnormal return of stocks removed-from-buy and added-to-sell have continued to fall, whereas the cumulative average abnormal return of stocks added-to-buy increased gradually. The empirical results show that analysts' recommendation revisions predict future long-term returns in the same direction as the change (i.e., upgrades of analysts' recommendations are followed by positive abnormal returns while their downgrades are followed by negative abnormal returns). Many researchers call this phenomenon post-revision return drift (PRD). Our empirical findings support the hypothesis that PRD persists since investors often underreact to analysts' recommendation revisions. In other words, the reaction of investors to recommendation changes is slow and takes several months.

Although we find analysts' recommendation revisions carry value for stocks removed-from-buy, added-to-sell, and added to buy, our empirical results suggest that prices of stocks removed-from-sell did not react to analysts' recommendation revisions in the short-term and the long-term. However, this result is also consistent with the finding of Womack (1996), and it shows that investors underreact to the recent good news about stocks that analysts recommended to sell previously. It is another potential explanation that investors still do not have a positive sentiment about stocks which are recently upgraded from sell to hold rate by analysts.

We used the Scholes/Williams to estimate cumulative abnormal returns from non-synchronous trading of securities based on the study of (Scholes & Williams, 1977). Appendix A suggests that results are robust for stocks added-to-sell, removed-from-buy, and removed-from-sell, yet the CAARs of stock added-to-buy are not significant in the short term and the long term.

Table 2: Cumulative Average Abnormal Returns (CAAR) following Analyst Recommendation Revisions, Consolidated (2005-2016)

		Added-to-Buy			Removed-from-Buy			Added-to-Sell			Removed-from-Sell		
		CAAR	p: n	t-statistic	CAAR	p: n	t-statistic	CAAR	p: n	t-statistic	CAAR	p: n	t-statistic
AD	(0, 0)	0.0073***	193 : 127	3.9897	-0.0053***	171 : 178	-3.332	-0.0135***	114 : 139	-4.0654	-0.0025	95 : 79	-0.095
	(0, +1)	0.0131***	194 : 126	5.0449	-0.0083***	161 : 188	-3.6765	-0.0198***	103 : 150	-4.2308	-0.0006	101 : 73	-0.015
	(0, +2)	0.0137***	190 : 130	4.2843	-0.012***	137 : 212	-4.3303	-0.0243***	98 : 155	-4.2403	-0.0143	89 : 85	-0.3147
Short-Term	(0, +3)	0.0157***	182 : 138	4.2616	-0.0153***	136 : 213	-4.7787	-0.0295***	95 : 158	-4.4569	0.0224	99 : 75	0.426
	(0, +4)	0.0157***	182 : 138	3.8169	-0.017***	137 : 212	-4.7529	-0.0351***	100 : 153	-4.7419	0.0714	94 : 80	1.2167
	(0, +5)	0.0185***	179 : 141	4.0913	-0.0178***	145 : 204	-4.5334	-0.0374***	93 : 160	-4.6077	0.0728	96 : 78	1.132
	(0, +10)	0.0204***	178 : 142	3.3335	-0.021***	152 : 197	-3.9556	-0.0362***	91 : 162	-3.2981	0.0194	92 : 82	0.2226
	(0, +20)	0.0223***	185 : 135	2.6375	-0.0351***	144 : 205	-4.7816	-0.039***	100 : 153	-2.5706	-0.0604	95 : 79	-0.5021
Long-Term	(0, +40)	0.0445***	183 : 137	3.7736	-0.0496***	146 : 203	-4.8458	-0.0667***	97 : 156	-3.1475	0.073	90 : 84	0.434
	(0, +60)	0.0581***	188 : 132	4.0381	-0.0713***	137 : 212	-5.709	-0.0678***	87 : 166	-2.6236	0.1775	92 : 82	0.8658

Notes: p:n denotes the number of positive and negative cumulative averaged abnormal return (CAAR) for stocks respectively while *, **, and *** denote the statistical significance at 0.1, 0.05 and 0.01 levels, respectively.

3.2. Abnormal Return and Shariah-compliant Stocks

Table 3 shows the results of univariate regression of equation (6) the coefficients of both RB_j and AS_j are negative in the short-term. While the coefficients of RB_j are -0.67% and -2.14% for respectively announcement day and five trading days period, the coefficients of AS_j are -1.31% and -4.13% for respectively same time horizons. However, the coefficients of AB_j are 0.70% and 1.57% for respectively announcement day and five-trading days periods. In the long term, the coefficients of RB_j and AS_j are -3.56% and -4.16% for one-month period while their coefficients are -10.52% and -8.64% for three-months period. On the other hand, the coefficients of AB_j are 1.70% and 3.93% for respectively one-month and three-month periods.

The coefficients of RS_j are 1.65% and 2.96% at 0.10 significance level for ten trading days and one-month periods while coefficients of $RS_j \times SN_j$ are -4.47% and -6.58% at 0.10 significance for the same period. The empirical results document that analysts' recommendation revisions have a significantly different effect for Shariah non-compliant stocks removed-from-sell are significantly and their Shariah-compliant counterparts.

The interaction variables of $AB_j \times SN_j$, $AS_j \times SN_j$, and $RB_j \times SN_j$ are not statistically significant in the short term and the long term. In other words, the effect of analysts' recommendation revisions for Shariah-compliant and Shariah non-compliant stocks are not significantly different.

Table 3 documents that analysts' recommendation revisions affect Shariah non-compliant and Shariah-compliant stocks removed-from-sell differently. If an analyst upgrades the rate of a Shariah-compliant stock from 'sell' to 'hold', it is estimated to have a positive cumulative abnormal return in the long term. On the other hand, the cumulative abnormal return of a Shariah non-compliant removed-from-sell stock is estimated to be negative. Although the impact of analysts' recommendation changes for Shariah-compliant stocks is consistent with the market efficiency theory of Grossman and Stiglitz (1980), empirical results of Shariah non-compliant stocks are inconsistent with findings of previous studies (Lloyd Davies and Canes, 1978; Elton et al., 1986; Womack, 1996)

The interaction variables of the dummy variable for Shariah non-compliant stocks with cumulative abnormal returns of stocks added-to-buy, removed-from-buy, and added-to-sell are not statistically significant in the short-term and long-term. In other words, the effect of analysts' recommendation revisions for Shariah-compliant and Shariah non-compliant stocks are not significantly different. There are several factors to explain why analysts' recommendation revisions do not cause higher price reactions for Shariah-compliant stocks.

According to Shariah screening methodology of SCM's SAC, the majority of the listed securities in Bursa Malaysia, more particularly almost 80% of stocks, are Shariah-compliant. On the other hand, an average Bumiputera owns around one month of the financial reserve

to cover his monthly expenditure in case of loss of income or employment while about 93% of Bumiputera households do not have savings, and about 66% do not have financial assets (Malaysia Household Income Survey, 2007). Amanah Saham Bumiputera (ASB) shows the level of savings of most Bumiputeras. The bottom 71.4% of unitholders in 2013 have an average of RM554 (*The State of Households*, 2014). Therefore, Muslim retail investors in Malaysia are much less than Non-Muslim investors. Moreover, the share of Islamic funds among wholesale and unit trust funds is less than 26% in 2019, and Islamic Institutional investors still may not be influential enough to distort price movements in the stock market. Thus, Bursa Malaysia may lack the coordinated behavior of a large number of Muslim retail and Islamic institutional investors while almost 80% of listed securities in Bursa Malaysia are Shariah-compliant. Under such circumstances, analysts' recommendation revisions may not cause significantly different effects for Shariah-compliant stocks.

Although a priori proposition would suggest that complying with Shariah rules and principles is associated with reflecting Islamic moral behavior in all business activities and management, the contemporary Shariah screening process simply focuses on avoiding prohibited business activities and satisfying particular financial ratios. Therefore, current Shariah screening methodologies do not provide any extra-financial information about Environmental, Social, and Governance (ESG) issues such as occupational health and safety, human rights, customer satisfaction, climate change, innovation, and corporate governance. In contrast, Ibrahim et al. (2006) and Farooq (2014) and Sabrun et al. (2018) demonstrate that Shariah-compliant firms have poorer ESG performance than Shariah non-compliant firms. Thus, current Shariah screening methodologies in Bursa Malaysia do not disseminate any extra-financial information on ESG issues to persuade investors that Shariah-compliant firms will perform better than Shariah non-compliant counterparts in the short-term or long-term. Thus, Shariah compliance as a non-financial attribute does not embody valuable information that equity analysts and investors should take into account unless coordinated behavior of a large number of Shariah sensitive investors changes the price equilibrium of Shariah-compliant and Shariah non-compliant stocks, and consequently, put severe limits to arbitrage.

The empirical results in Table 2 and **Error! Reference source not found.** 3 show that both results are quite similar in magnitude and significance of the coefficients. Therefore, our findings are robust in terms of econometric model robustness and control variable robustness check.

Table 3: Individual Cumulative Abnormal Returns (CAR) for Stocks After Analyst Recommendation Revisions for Shariah-compliant and Non-compliant Stocks, Consolidated (2005-2016)

	AD	Short Term						Long Term			
	$CAR_{j,0,0}$	$CAR_{j,0,1}$	$CAR_{j,0,2}$	$CAR_{j,0,3}$	$CAR_{j,0,4}$	$CAR_{j,0,5}$	$CAR_{j,0,10}$	$CAR_{j,0,20}$	$CAR_{j,0,40}$	$CAR_{j,0,60}$
AB_j	0.0070**	0.0123***	0.0131***	0.0147***	0.0137***	0.0157***	0.0156**	0.0170*	0.0282*	0.0393*
AS_j	-0.0131***	-0.0195***	-0.0279***	-0.0344***	-0.0390***	-0.0413***	-0.0397***	-0.0416***	-0.0845***	-0.1052***
RB_j	-0.0067**	-0.0096***	-0.0145***	-0.0182***	-0.0199***	-0.0214***	-0.0252***	-0.0356***	-0.0575***	-0.0864***
RS_j	-0.0029	-0.0050	-0.0018	0.0039	0.0047	0.0117	0.0165*	0.0296*	0.0336	0.0406
$AB_j \times SN_j$	0.0042	0.0046	0.0025	0.0054	0.0043	0.0126	0.0072	0.0036	-0.0204	-0.0332
$AS_j \times SN_j$	-0.0027	-0.0033	0.0041	0.0006	0.0005	-0.0053	0.0009	-0.0221	-0.0064	-0.0248
$RB_j \times SN_j$	0.0145*	0.0144	0.0142	0.0155	0.0121	0.0069	0.0036	-0.0120	0.0080	0.0149
$RS_j \times SN_j$	0.0027	0.0059	0.0302	0.0124	-0.0167	-0.0381	-0.0447*	-0.0658*	-0.1341*	-0.1684*
Obs	1096	1096	1096	1096	1096	1096	1096	1096	1096	1096
Adjusted R-square	0.029	0.041	0.062	0.076	0.070	0.077	0.056	0.042	0.039	0.043

3.3. Abnormal Return and Earnings Announcements

Following recommendation revisions issued contemporaneously with earnings announcements, both stocks removed-from-buy and added-to-sell had an abnormal loss in the short term and the long term while the CAARs of stocks added-to-buy are statistically significant and positive in the short term and the long term. In Table 4, empirical results show the CAARs of stocks removed-from-buy are -0.54% and -1.63% at 0.01 significance level on the announcement day (0, 0) and five-day event-window (0, +5) while CAARs of stocks added-to-sell are -1.42% and -3.51%, respectively, at 0.01 significance level in the same event windows. On the other hand, the CAARs of stocks added-to-buy increased to 0.91% and 1.57% at 0.01 significance level on the announcement day (0, 0) and five-day event window (0, +5). In the long term, the CAARs of stocks removed-from-buy and added-to-sell continue to decrease after recommendation revisions with earnings announcements. More specifically, the CAARs of stocks removed-from-buy and added-to-sell are -3.46% and -3.17% at 0.01 significance level in one-month event-window (0, +20) while the CAARs of both categories of stocks respectively reduced to -5.80% and -6.46% at 0.01 significance level in one-month event-window (0, +60). While the CAAR of stocks added-to-buy is to 1.36% and not significant at 0.1 level in one-month event-window (0, +20), its CAAR rose to 5.05% at 0.01 significance level in three-month event-window (0, +60).

Almost 75% of analyst recommendation revisions took place within one week after earnings announcements and empirical results exhibit that stock price reactions are sound and significant to recommendation revisions issued contemporaneously with recent earnings announcements. Our findings suggest that firms' earnings announcements can trigger analyst recommendation revisions since it is one of the most critical financial data to calculate the long-term value of a firm. Similarly, studies of Ivkovic and Jegadeesh (2004), Menéndez-Requejo (2005), and Altınkılıç and Hansen (2009) found that recommendation changes following earnings-related news cause price reactions in the short-term and long term which are consistent with our empirical results.

The results in Table 4 demonstrate that following recommendation revisions beyond earnings announcements, the CAARs of stocks removed-from-buy and added-to-sell are significant and negative, whereas the CAARs of stocks added-to-buy are significant and positive in the short term and the long term. On the announcement day, the CAAR of stocks removed-from-buy is -0.49% while the CAAR of stocks added-to-sell is -0.09 but not significant. In five-day event window (0, +5), the CAARs of stocks removed-from-buy and added-to-sell are -3.08% and -5.25% respectively at 0.01 significance level. On the other hand, the CAARs of stocks added-to-buy is 2.43% in the five-day event window (0, +5). In one-month event window (0, +20), the CAARs of stocks removed-from-buy and added-to-sell are -3.87% and -8.62% at 0.01 significance level. In the three-month event window (0, +60), the CAARs of both categories of stocks respectively fell to -12.61% and -18.51%. On the other hand, stocks added-to-buy rose

to 4% and 7.37% in respectively one-month event window (0, +20) and three-month event window (0, +60).

We provide empirical evidence for stronger and significant price reactions to recommendation revisions that are not issued in response to recent earnings announcements. Thus, analysts' private research has a more significant role in price discovery and facilitating market efficiency than earnings announcements. We can conclude that analyst recommendation is not information-free, and analysts in Malaysia do not necessarily piggyback on the news related to the financial results of corporations. In other words, analysts' recommendation revisions may carry new information beyond corporate news. This finding undermines fundamental arguments of Ivkovic and Jegadeesh (2004), Menéndez-Requejo (2005), and Altınkılıç and Hansen (2009) which claims that the analysts often piggyback on recent corporate news and analyst recommendations related to earnings announcements cause greater price reactions.

The study employed the Scholes/Williams to estimate cumulative abnormal returns from non-synchronous trading of securities based on the study of (Scholes and Williams, 1977). Appendix B documents that results are robust for stocks added-to-buy without earnings announcements, added-to-sell with/without earnings announcements, removed-from-buy with/without earnings announcements, and removed-from-sell with/without earnings announcements, yet the CAARs of stock added-to-buy with earnings announcements are not significant in short-term and long-term.

Table 4: Cumulative Average Abnormal Return (CAAR) for Stocks After Analyst Recommendation Revisions Related to Earnings Announcements and Beyond Earnings Announcements, Consolidated (2005-2016)

		Added-to-Buy With Earnings Announcement			Added-to-Buy Without Earnings Announcement			Removed-from-Buy With Earnings Announcement			Removed-from-Buy Without Earnings Announcement		
		CAAR	p: n	t-statistic	CAAR	p: n	t-statistic	CAAR	p: n	t-statistic	CAAR	p: n	t-statistic
AD	(0, 0)	0.0091***	136 : 86	3.9701	0.0034	57 : 41	1.1266	-0.0054***	138 : 142	-2.9331	-0.0049*	33 : 35	-1.6096
	(0, 1)	0.0121***	129 : 93	3.7445	0.0153***	65 : 33	3.5399	-0.008***	130 : 150	-3.0724	-0.0092**	31 : 37	-2.1377
Short	(0, 2)	0.0116***	132 : 90	2.9149	0.0181***	58 : 40	3.4264	-0.0116***	112 : 168	-3.6289	-0.0133**	25 : 43	-2.5194
-	(0, 3)	0.0133***	127 : 95	2.908	0.0208***	55 : 43	3.4	-0.0138***	114 : 166	-3.7181	-0.021***	22 : 46	-3.4459
Term	(0, 4)	0.0132***	126 : 96	2.5705	0.0212***	56 : 42	3.1039	-0.0159***	118 : 162	-3.8371	-0.0212***	19 : 49	-3.1026
	(0, 5)	0.0157***	122 : 100	2.8016	0.0243***	57 : 41	3.2538	-0.0163***	120 : 160	-3.6052	-0.0231***	25 : 43	-3.0852
Long - Term	(0, 10)	0.017**	125 : 97	2.2371	0.0275***	53 : 45	2.7135	-0.0208***	123 : 157	-3.3851	-0.0231**	28 : 40	-2.2793
	(0, 20)	0.0136	125 : 97	1.2987	0.04***	60 : 38	2.8621	-0.0346***	118 : 162	-4.083	-0.0387***	25 : 43	-2.7675
	(0, 40)	0.0367**	123 : 99	2.506	0.0603***	60 : 38	3.0857	-0.0374***	121 : 159	-3.1584	-0.0992***	24 : 44	-5.0743
	(0, 60)	0.0505***	125 : 97	2.8274	0.0737***	63 : 35	3.0897	-0.058***	116 : 164	-4.0145	-0.1261***	20 : 48	-5.2889

		Added-to-Sell With Earnings Announcement			Added-to-Sell Without Earnings Announcement			Removed-from-Sell With Earnings Announcement			Removed-from-Sell Without Earnings Announcement		
		CAAR	p: n	t-statistic	CAAR	p: n	t-statistic	CAAR	p: n	t-statistic	CAAR	p: n	t-statistic
AD	(0, 0)	-0.0142***	92 : 112	-4.4424	-0.0096	25 : 25	-1.1341	-0.0033	74 : 60	-0.0964	0	21 : 19	-0.0027
	(0, 1)	-0.0211***	83 : 121	-4.6455	-0.014	20 : 30	-1.1638	-0.0063	77 : 57	-0.1306	0.0165**	24 : 16	2.1285
Short	(0, 2)	-0.0235***	83 : 121	-4.2312	-0.027*	13 : 37	-1.8391	-0.0245	66 : 68	-0.4159	0.0153*	23 : 17	1.6187
-	(0, 3)	-0.0259***	75 : 129	-4.0409	-0.0434***	13 : 37	-2.5579	0.0193	72 : 62	0.2833	0.0317***	27 : 13	2.8956
Term	(0, 4)	-0.0318***	76 : 128	-4.4294	-0.0507***	14 : 36	-2.6722	0.0861	76 : 58	1.1301	0.0291**	18 : 22	2.3812
	(0, 5)	-0.0351***	75 : 129	-4.4735	-0.0525***	15 : 35	-2.5246	0.0886	75 : 59	1.0619	0.027**	21 : 19	2.0136

Long - Term	(0, 10)	-0.0338***	68 : 136	-3.181	-0.0555**	19 : 31	-1.9711	0.0238	70 : 64	0.2106	0.0077	10 : 18	0.4238
	(0, 20)	-0.0317***	79 : 125	-2.157	-0.0862**	20 : 30	-2.2162	-0.0862	72 : 62	-0.5525	0.0164	11 : 17	0.6542
	(0, 40)	-0.0571***	75 : 129	-2.7816	-0.1643***	16 : 34	-3.0227	0.092	69 : 65	0.422	0.0291	9 : 19	0.8302
	(0, 60)	-0.0646***	75 : 129	-2.5802	-0.1851***	18 : 32	-2.7912	0.2321	71 : 63	0.8726	0.0234	9 : 19	0.5478

Notes: p:n denotes the number of positive and negative Averaged Abnormal Return (AAR) for stocks respectively while *, **, and *** denote the statistical significance at 0.1, 0.05 and 0.01 levels, respectively

3.4. Abnormal Return, Earnings Announcements, and Shariah-compliant Stocks

T documents that the coefficients of both RBe_j and ASe_j are negative in the short term and significant. The empirical results exhibit that while the cumulative abnormal return (CAR) of a stock removed-from-buy is estimated to be -0.73% and -2.21% during the announcement (0, 0) and five trading days period (0, +5), the CARs of a stock added-to-sell is -1.28% and -3.98% for respectively same periods following analyst recommendation revisions issued related to earnings news. However, we find that the CARs of a stock added-to-buy are 0.90% and 1.50% during the announcement (0, 0) and five trading days period (0, +5) while the CAR of a stock removed-from-sell is not significant for the same periods. In the long term, the CARs of a stock removed-from-buy and added-to-sell are respectively -3.56% and -3.67% in one-month event window (0, +20) while their coefficients are -7.90% and -10.82% in three-month event window (0, +60). On the other hand, the CARs of a stock added-to-buy and added-to-sell are not significant in one-month (0, +20) and three-month event window (0, +60).

It is important to discuss the impact of analysts' recommendation changes beyond earnings announcements. Whereas the cumulative abnormal return (CAR) of a stock removed-from-buy is not different from 0 at 0.1 significance level on the announcement day, its CAR is estimated to be -1.89% in the five-day event window (0, +5). While the CAR of a stock added-to-sell is -1.32% on the event day, our model estimates its CAR as -5.29% in the five-day event window (0, +5). On the other hand, the CARs of a stock added-to-buy and removed-from-sell are not significant on the announcement day while the CARs of a stock added-to-buy and removed-from-sell are respectively 1.72% and 5.67% at 0.05 significance level in five-day event window (0, +5). In the one-month event window (0, +20), the CAR of a stock added-to-sell is -5.78% while the CAR of a stock removed-from-buy is not significant. In the three-month event window (0, +60), the CAR of a stock removed-from-buy is -11.33% while the CAR of a stock added-to-sell is not significant. On the other hand, the CARs of stocks added-to-buy are not significant in one-month (0, +20) and three-month event window (0, +60).

We examine the analysts' stock recommendation revisions issued contemporaneously with earnings announcements in terms of the magnitude and direction. Empirical results document that upward (downward) stock recommendation revisions are often correlated with positive (negative) cumulative abnormal returns in the short-term and long-term event window. Thus, analysts' recommendations play a significant role to facilitate market efficiency and help price discovery by incorporating recent financial results during preparing result reports and revise their stock price.

The CARs of a stock removed-from-buy and added-to-sell tend to be negative in the short-term while a stock added-to-buy is estimated to have positive cumulative abnormal returns in the short-term after analysts' recommendation changes beyond earnings announcements.

It shows that analysts' recommendations beyond earnings announcements lead to more significant price reactions. The study indicates that investors recognize the ability of analysts to predict the value of listed securities in Bursa Malaysia.

Turning to the key variable of interest, SN_j, Table 5 indicates that the interaction variables of $ABe_j \times SN_j$, $ABw_j \times SN_j$, $ASe_j \times SN_j$, $ASw_j \times SN_j$, $RBe_j \times SN_j$, $RBw_j \times SN_j$, and $RSe_j \times SN_j$ are not significant. Thus, analysts' recommendation revisions issued contemporaneously without corporate news often do not cause significantly different effects for Shariah-compliant and Shariah non-compliant stocks. However, a Shariah non-compliant stocks removed-from-sell have a significant and negative cumulative abnormal return in the short term. Higher cumulative abnormal returns (loss) for upgraded (downgraded) Shariah-compliant stocks are consistent with *Price Pressure Hypothesis* (PPH) and *Imperfect Substitutes Hypothesis* (ISH).

The empirical findings regarding the insignificance of the Shariah-compliant status of listed securities to determine price reactions for upgraded and downgraded stocks in section 4.4 are consistent with findings in section 4.2. The results about the impact of analysts' recommendation revisions issued contemporaneously with and without earnings announcements over price reactions in section 4.4 are consistent with findings in section 4.3.

Table 5: Individual Cumulative Abnormal Returns (CAR) for Shariah-compliant and Non-compliant Stocks After Analyst Recommendation Revisions Related to Earnings Announcements and Beyond Earnings Announcements, Consolidated (2005-2016)

	AD	Short Term						Long Term			
	$CAR_{j,0,0}$	$CAR_{j,0,1}$	$CAR_{j,0,2}$	$CAR_{j,0,3}$	$CAR_{j,0,4}$	$CAR_{j,0,5}$		$CAR_{j,0,10}$	$CAR_{j,0,20}$	$CAR_{j,0,40}$	$CAR_{j,0,60}$
ABe_j	0.0090***	0.0114***	0.0119*	0.0138***	0.0120**	0.0150**		0.0161**	0.0123	0.0280	0.0318
ABw_j	0.0022	0.0143**	0.0158**	0.0166**	0.0176**	0.0172**		0.0146	0.0266	0.0287	0.0560
ASe_j	-0.0128***	-0.0200***	-0.0256***	-0.0292***	-0.0362***	-0.0398***		-0.0374***	-0.0356***	-0.0859***	-0.1082***
ASw_j	-0.0132*	-0.0169*	-0.0367***	-0.0537***	-0.0514***	-0.0529***		-0.0525***	-0.0578**	-0.0809	-0.0712
RBe_j	-0.0073**	-0.0096**	-0.0147***	-0.0174***	-0.0198***	-0.0221***		-0.0280***	-0.0367***	-0.0485**	-0.0790***
RBw_j	-0.0044	-0.0093	-0.0136*	-0.0212**	-0.0205**	-0.0189*		-0.0154	-0.0318	-0.0891**	-0.1133**
RSe_j	-0.0041	-0.0133**	-0.0109*	-0.0091	-0.0088	-0.0032		0.0075	0.0202	0.0046	0.0123
RSw_j	0.0012	0.0213*	0.0244**	0.0413***	0.0445***	0.0567***		0.0412*	0.0547*	0.1110*	0.1218
$ABe_j \times SN_j$	0.0004	-0.0005	-0.0133	-0.0112	0.0005	0.0041		-0.0113	-0.0051	0.0352	0.0338
$ABw_j \times SN_j$	0.0116	0.0120	0.0264	0.0308	0.0094	0.0261		0.0307	0.0095	-0.0764	-0.1096
$ASe_j \times SN_j$	-0.0098	-0.0101	-0.0070	-0.0090	-0.0044	-0.0091		-0.0205	-0.0499	-0.0218	-0.0498
$ASw_j \times SN_j$	0.0287	0.0269	0.0508*	0.0489*	0.0326	0.0237		0.0752*	0.0712	0.0246	0.0269
$RBe_j \times SN_j$	0.0225**	0.0214	0.0251	0.0269	0.0244	0.0240		0.0225	-0.0053	0.0382	0.0652
$RBw_j \times SN_j$	-0.0035	0.0010	-0.0052	-0.0031	-0.0087	-0.0251		-0.0401	-0.0445	-0.0513	-0.1787
$RSe_j \times SN_j$	0.0060	0.0210	0.0616***	0.0339*	-0.0055	-0.0136		-0.0240	-0.0712	-0.1373	-0.2167*
$RSw_j \times SN_j$	-0.0055	-0.0339	-0.0405*	-0.0406	-0.0523*	-0.0995***		-0.0869***	-0.0656	-0.1577	-0.1222
Obs	1096	1096	1096	1096	1096	1096		1096	1096	1096	1096
Adjusted R-square	0.035	0.053	0.062	0.101	0.089	0.098		0.071	0.050	0.048	0.053

Conclusion

In this study, we examined both the short and long-term performance of upgraded and downgraded stocks in Bursa Malaysia. The empirical results indicate that while the CAARs of stocks added-to-buy have gradually increased, the CAARs of stocks added-to-sell and remove-from-buy have significantly decreased. In other words, the immediate reactions to recommendation revisions happened to be permanent and do not revert to their mean. It implies that analysts' recommendation revisions carry valuable information, and our study provides fresh evidence for the expanded definition of market efficiency suggested by Grossman and Stiglitz (1980). Moreover, we observed PRD (post-revision return drift) for stocks added-to-buy, stocks added-to-sell and remove-from-buy that market prices react slowly to the information contained in recommendation revisions which is consistent with findings of Barber et al. (2001), Brav and Lehavy (2003), Stickel (1995), Womack (1996), Altınkılıç and Hansen (2009), Altınkılıç, Balashov, and Hansen (2013), and Kim and Song (2015).

We secondly investigated the effect of analysts' recommendation revisions issued contemporaneously with earnings announcements and without earnings announcements on price reactions over various time horizons because the study aims to provide evidence on the information content of analysts' recommendation changes preceding earnings announcements. The study concludes that earnings announcements can trigger analysts' recommendation revisions because the investors react strongly to analysts' recommendation revisions issued contemporaneously with earnings announcements. The study's finding is consistent with studies of Ivkovic and Jegadeesh (2004), Menéndez-Requejo (2005), and Altınkılıç and Hansen (2009) which argues that earnings announcements are one of the most important information to predict the value of a company and cause changes in analysts' recommendation revisions. However, the empirical results also documented that analysts' recommendation revisions beyond earnings announcements often induce stronger market reactions. Thus, the findings imply that analysts' private research has a considerable information content and more significant function to facilitate price discovery.

As the most striking result to emerge from the empirical analysis, we report that analysts' recommendations for Shariah-compliant companies often do not own any additional investment value than those for Shariah non-compliant stocks. Analysts' recommendation revisions give rise to stronger market reactions for Shariah-compliant stocks on rare occasions. This finding is consistent with PPH and ISH. However, the documented results in this study suggest that abnormal returns of upgraded and downgraded Shariah non-compliant firms are often not significantly different from Shariah-compliant firms.

Among possible explanations for not having significantly different price reactions for Shariah non-compliant firms is the large market share of Shariah-compliant listed firms in Bursa Malaysia. Thus, a Shariah-compliant stock has many substitutes among Shariah-compliant stocks in Bursa Malaysia even if Shariah non-compliant stocks are their imperfect substitutes.

Another potential explanation is the low market share of Muslim retail investors and Islamic Institutional Investors in Bursa Malaysia. In other words, conventional financial institutions are still the majority shareholder of Shariah-compliant listed companies in Bursa Malaysia. Therefore, the non-financial preference of Shariah-sensitive investors neither put limits to arbitrage nor deteriorate market efficiency.

Policy Recommendations

After analyzing the impact and function of analyst recommendation revisions on Shariah-compliant and Shariah non-compliant firms in Bursa Malaysia, the findings of this study have essential implications for brokerage firms and investors.

We find that analysts' recommendation revisions that are not directly related to earnings announcements lead to stronger price reactions. This finding implies that analysts' private research embodies more valuable information than earnings announcements. Therefore, asset management firms in Malaysia have a profit opportunity if they set up an equity research department employing qualified researchers and release their equity reports to influence investors rather than following passive investment strategies. However, it is crucial to note that brokerage firms should be willing to give recommendations only if they can compensate their cost of analyst reports.

Our results show that analysts' recommendation revisions do not embody any additional information and value for Shariah-compliant firms. Moreover, most analysts' reports show that many brokerage firms still did not integrate Shariah issues as extra-financial information into stock valuations. However, analysts in Malaysia have a vital responsibility to investigate the impact of fulfilling Shariah screening benchmarks on corporate financial performance consider the growing importance of integrating ESG factors as extra-financial information into firm valuation models.

Investors should be willing to pay for the investment advice of brokerage firms in Malaysia since they have a profit opportunity by following brokers' recommendations. However, investors must ensure that their profit potential is greater than the cost of the advice. Although financial assets managed by Islamic institutional and Muslim retail investors have dramatically increased over the last few decades, price reaction towards analysts' recommendation changes for Shariah-compliant firms is not significantly different from investors' response to Shariah non-compliant firms. Thus, most investors still seem to believe that fulfilling business-activity-based benchmarks and financial benchmarks of the Shariah Screening methodology do not add any financial value to a company.

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Appendix

Appendix A: *Econometric Model Robustness Test:* **Cumulative Average Abnormal Return (CAAR) (Based on Scholes/Williams model) for Stocks After Analyst Recommendation Revisions, Consolidated (2005-2016)**

		Added-to-Buy			Removed-from-Buy			Added-to-Sell			Removed-from-Sell		
		CAAR	p: n	t-statistic	CAAR	p: n	t-statistic	CAAR	p: n	t-statistic	CAAR	p: n	t-statistic
AD	(0, 0)	0.0072	193 : 127	1.2367	-0.0053**	173 : 176	-2.9465	-0.0133***	117 : 136	-4.3022	0.0015	95 : 79	0.0514
Short-Term	(0, 1)	0.0075	174 : 146	0.3894	-0.009***	158 : 191	-3.5258	-0.0195***	103 : 150	-4.4825	0.0031	98 : 76	0.0756
	(0, 2)	0.0126	195 : 125	1.5362	-0.0123***	136 : 213	-3.9547	-0.0243***	96 : 157	-4.5453	-0.0107	85 : 89	-0.21
	(0, 3)	0.014	190 : 130	1.3956	-0.0157***	135 : 214	-4.3735	-0.0297***	88 : 165	-4.816	0.0112	95 : 79	0.1907
	(0, 4)	0.0174	186 : 134	1.4982	-0.0172***	139 : 210	-4.2821	-0.0358***	90 : 163	-5.1946	0.0397	94 : 80	0.604
	(0, 5)	0.0115	179 : 141	0.8897	-0.0177***	140 : 209	-4.0179	-0.0389***	90 : 163	-5.1485	0.0407	89 : 85	0.5654
Long-Term	(0, 10)	0.0097	180 : 140	0.5041	-0.0218***	148 : 201	-3.6577	-0.0387***	86 : 167	-3.7872	-0.0305	81 : 93	-0.3133
	(0, 20)	0.0248	185 : 135	0.9325	-0.0362***	133 : 216	-4.393	-0.0433***	98 : 155	-3.066	-0.1485	92 : 82	-1.1025
	(0, 40)	0.0431	185 : 135	1.1594	-0.0557***	137 : 212	-4.8302	-0.0793***	90 : 163	-4.0205	0.0369	93 : 81	0.196
	(0, 60)	0.0567	190 : 130	1.2515	-0.0795***	141 : 208	-5.6564	-0.0895***	92 : 161	-3.7178	0.1582	91 : 83	0.6892

Notes: p:n denotes the number of positive and negative Averaged Abnormal Return (AAR) for stocks respectively while *, **, and *** denote the statistical significance at 0.1, 0.05 and 0.01 levels, respectively.

Appendix B: *Econometric Model Robustness Test:* **Cumulative Average Abnormal Return (CAAR) (Based on Scholes/Williams Model) for Stocks After Analyst Recommendation Revisions Related to Earnings Announcements and Beyond Earnings Announcements, Consolidated (2005-2016)**

		Added-to-Buy With Earnings Announcement			Added-to-Buy Without Earnings Announcement			Removed-from-Buy With Earnings Announcement			Removed-from-Buy Without Earnings Announcement		
		CAAR	p: n	t-statistic	CAAR	p: n	t-statistic	CAAR	p: n	t-statistic	CAAR	p: n	t-statistic
AD	(0, 0)	0.0092	135 : 87	1.1198	0.0026	58 : 40	0.7617	-0.0054**	139 : 141	-2.5369	-0.0051*	34 : 34	-1.6475
Short - Term	(0, 1)	0.0121	132 : 90	1.0353	0.0137***	63 : 35	2.8655	-0.0087***	129 : 151	-2.9106	-0.01**	29 : 39	-2.2761
	(0, 2)	0.0132	133 : 89	0.9249	0.0157***	57 : 41	2.6854	-0.012***	111 : 169	-3.2801	-0.0135**	25 : 43	-2.5225
	(0, 3)	0.0171	131 : 91	1.0355	0.018***	55 : 43	2.6589	-0.0146***	112 : 168	-3.4665	-0.0201***	22 : 46	-3.2329
	(0, 4)	0.0083	123 : 99	0.4486	0.0189**	56 : 42	2.4977	-0.0166***	119 : 161	-3.5102	-0.0198***	20 : 48	-2.8577
	(0, 5)	0.0053	120 : 102	0.2624	0.0206**	55 : 43	2.488	-0.0171***	115 : 165	-3.2981	-0.0203***	25 : 43	-2.671
Long - Term	(0, 10)	0.0058	122 : 100	0.2127	0.0183*	58 : 40	1.6342	-0.0227***	120 : 160	-3.2382	-0.0201**	27 : 41	-1.9532
	(0, 20)	0.025	129 : 93	0.6617	0.0247*	56 : 42	1.5925	-0.0368***	107 : 173	-3.8007	-0.0362**	25 : 43	-2.5483
	(0, 40)	0.0418	125 : 97	0.7929	0.0463**	60 : 38	2.1403	-0.0447***	116 : 164	-3.3076	-0.1004***	20 : 48	-5.0561
	(0, 60)	0.0582	127 : 95	0.9057	0.0544**	63 : 35	2.0611	-0.0691***	120 : 160	-4.1896	-0.1227***	20 : 48	-5.0644
		Added-to-Sell With Earnings Announcement			Added-to-Sell Without Earnings Announcement			Removed-from-Sell With Earnings Announcement			Removed-from-Sell Without Earnings Announcement		
AD	(0, 0)	-0.0138***	92 : 112	-3.9224	-0.0121	22 : 28	-1.3946	0.0021	72 : 62	0.0542	-0.0002	23 : 17	-0.0413
Short - Term	(0, 1)	-0.0203***	86 : 118	-4.0783	-0.0179	17 : 33	-1.4649	-0.0007	75 : 59	-0.0123	0.0142*	23 : 17	1.7885
	(0, 2)	-0.0226***	86 : 118	-3.713	-0.0304**	12 : 38	-2.0282	-0.0185	62 : 72	-0.2804	0.0117	23 : 17	1.2014
	(0, 3)	-0.0246***	84 : 120	-3.495	-0.0473***	12 : 38	-2.7339	0.0058	69 : 65	0.0764	0.0267**	26 : 14	2.3686
	(0, 4)	-0.03***	86 : 118	-3.819	-0.0536***	14 : 36	-2.7712	0.0447	72 : 62	0.5244	0.0248**	22 : 18	1.9709
	(0, 5)	-0.0324***	80 : 124	-3.7596	-0.0555***	13 : 37	-2.617	0.0467	70 : 64	0.5002	0.0228*	19 : 21	1.6524
	(0, 10)	-0.03*	73 : 131	-2.5683	-0.0581**	19 : 31	-2.0238	-0.0432	62 : 72	-0.3419	0.0076	7 : 21	0.4066

|														
Long-Term	(0, 20)	-0.0249	83 : 121	-1.546	-0.0916**	18 : 32	-2.311	-0.2069	71 : 63	-1.1841	0.0232	9 : 19	0.8998
	(0, 40)	-0.0413*	82 : 122	-1.8349	-0.1649***	16 : 34	-2.9752	0.0383	71 : 63	0.157	0.0422	11 : 17	1.169
	(0, 60)	-0.0382	74 : 130	-1.392	-0.1843***	14 : 36	-2.7265	0.2047	69 : 65	0.6875	0.0237	11 : 17	0.5392

Notes: p:n denotes the number of positive and negative Averaged Abnormal Return (AAR) for stocks respectively while *, **, and *** denote the statistical significance at 0.1, 0.05 and 0.01 levels, respectively.

Appendix C: Cumulative Average Abnormal Return (CAAR) for Added-to-Buy Stocks After Analyst Recommendation Revisions
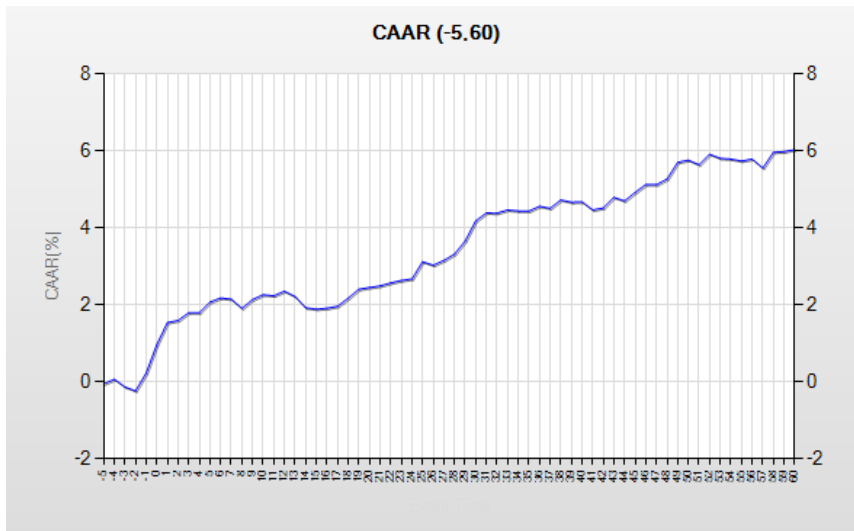
Appendix D: Cumulative Average Abnormal Return (CAAR) for Removed-from-Buy Stocks After Analyst Recommendation Revisions
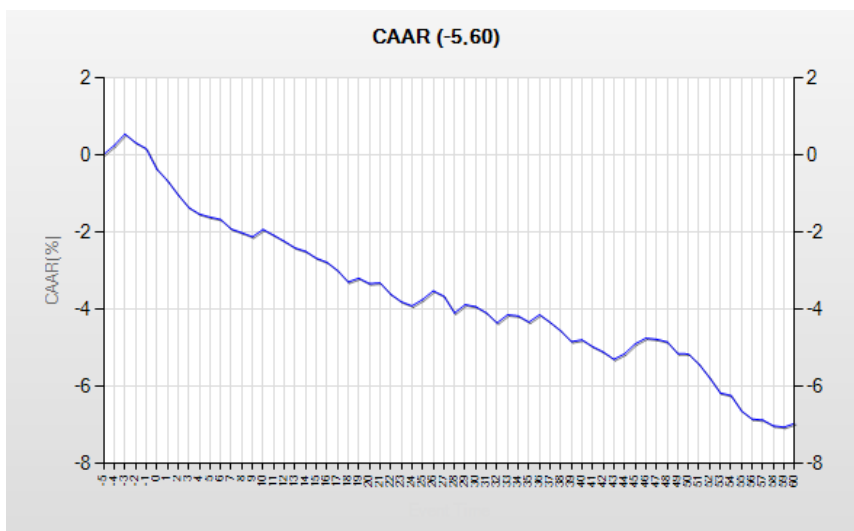
Appendix E: Cumulative Average Abnormal Return (CAAR) for Added-to-Sell Stocks After Analyst Recommendation Revisions
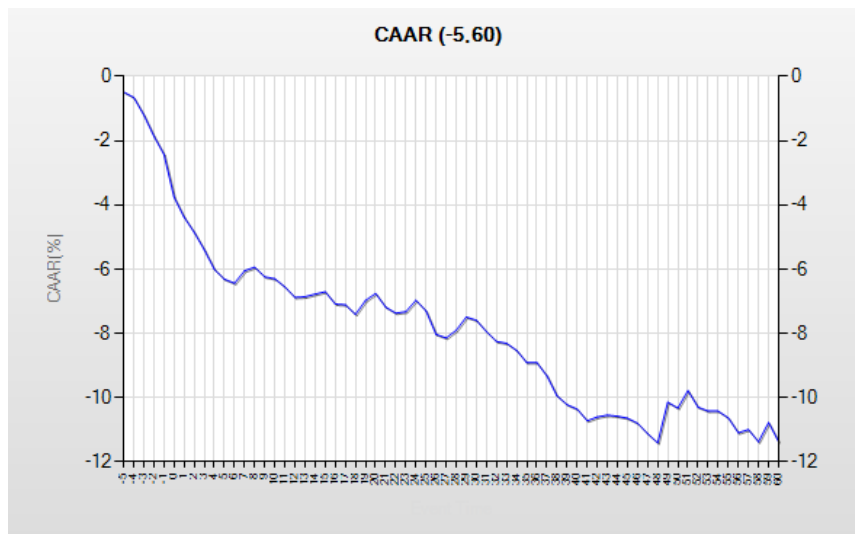
Appendix F: Cumulative Average Abnormal Return (CAAR) for Removed-from-Sell Stocks After Analyst Recommendation Revisions
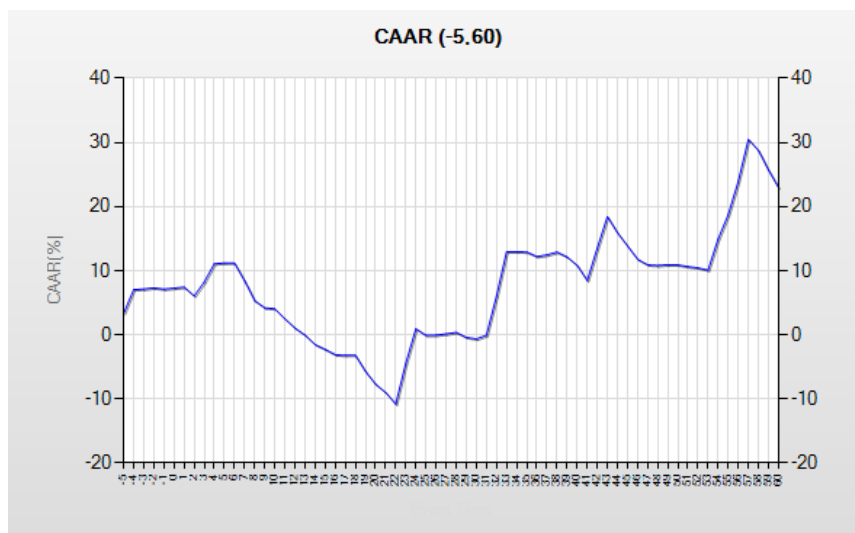
Analysis of Europe's First Fully-Fledged Islamic Digital Bank in the Arena of New Age Banking

Yusuf Dinç[1], Ruslan Nagayev[2], Rashed Jahangir[3]

Abstract

The study aims to provide the first systematic account of Europe's first fully-fledged digital Islamic banking service and review in detail with the available information. It explains the new-age banking concept and theory as well as identifies the role of *insha* in digital trends. The research primarily focuses on the concept of new-age banking and demonstrates the application of this concept by scrutinizing an Islamic digital banking platform. It selects '*insha*', a digital banking service platform [in other words, Bank-as-a-Service platform] that provides digital banking services in Europe, as a case for this study. The study reveals two Tiers of the new age banking: Tier I NAB brought cost efficiency by reducing personnel expenses by replacing the workforce, and Tier II NAB has come front to reduce personnel expenses by replacing workforce intelligence directly. Besides, it also discloses four aspects of new-age banking: i) Accessibility, ii) Cost Advantage, iii) Time Efficiency, and iv) Security. On the other hand, the study shows the application of new-age banking by spotlighting an Islamic digital bank, *insha*, which experienced significant tractions within two months of inauguration, and the app has been downloaded over 9,000 times. This paper provides an excellent case, *insha*, to comprehend the concept of new-age banking, and manifests how it could facilitate customers to access the banking platform.

Keywords: New age banking, Fintech, Islamic Fintech, Digital banking, Banking-as-a-Services, Islamic finance.

Jel Codes: F65, G21, G29

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Introduction

Over the past few decades, the world has experienced a stunning transformation of the finance sector through developments in technology. Consequently, it is becoming challenging to ascertain the banking sector without implementing the most advanced technologies. The financial technologies that have been implemented so far are the initial steps of the New Age Banking (NAB) era.

Much of the available literature on NAB deals with the narrow sense use or sub-banking forms (Shankar & Kahanna, 2011; Singh & Kaur, 2012; Rani & Kavitha, 2014; Padmaavathy & Adalarasu, 2015). In some literature, the term NAB is used in a narrow sense as internet banking (Singhal & Padhmanabhan, 2008). Bihari and Murdia (1970) used the term as 'another form of a banking institution'. However, the approach of this study is to take the whole banking system into account to consider NAB as an emerging concept.

Before delving into the new-age-banking, familiarizing with the concept of internet banking and conducted literature could help to establish a basement in order to comprehend the NAB concept and open a door for further exploration.

The term internet banking is used for the new age banking system, which is also called e-banking, online banking, and e-payment (Ozuru et al., 2010; Singhal and Padhmanbhan, 2008; Beer, 2006; IAMAI, 2006). In this system, banking activities are done through the internet, which is the core delivery channel. These activities include: "viewing, checking, and savings account balances, transferring funds, paying mortgages, purchasing financial instruments and certificates of deposits, and paying bills" (Haque et al., 2009). A report on online banking claimed internet banking as convenient, flexible operational timing, no geographical barriers, and minuscule cost for services (IAMAI, 2006). This convenience of online banking facilitates customers to access their banking account at any time and giving greater control over their account in order to financing and regular money management (Beer,2006). For this reason, customers are getting satisfied with the development of this banking system and services, which ultimately triggered a significant relationship between internet banking service quality, e-customer satisfaction, and e-customer loyalty (Amin, 2016). Along with customers' benefits, this online banking is also significantly profitable for the financial sectors (Williamson & Money–America's, 2006).

Despite the attention on internet banking, there is a dearth of understanding about the nature and scope of new-age banking. In fact, the discussion of NAB in the Islamic banking sphere is trivial. For this reason, the study aims to provide comprehensive systematic information regarding NAB and discuss digital service of Islamic banking in the light of NAB concept. This is descriptive research where it mainly focuses on the concept of NAB and demonstrates the application of this concept by scrutinizing '*insha*'. It is a digital banking service platform [also known as 'Bank-as-a-Service' platform) that provides digital banking services in Europe.

The reminder part of this paper is organized as follows. Section 2 discusses the concept, nature, significance, and features, and future of new-age banking. The overview of Islamic digital

banking and NAB is explained under Section 3. Section 4 scrutinizes the case in the light of NAB. Finally, section 5 concludes.

1. New Age Banking (NAB)

The NAB can be defined as developing financial intermediation processes in banking with informatics and computer technologies. It is divided into two broad tiers (see *Figure 1*)—i.e., Tier I and Tier II—by offering an adequate explanation from the definition. Computer-technologies-oriented banking activities is the main element of Tier I NAB; informatics, on the other hand, is the key factor for Tier II NAB.

Figure 1: Framework of Tier I and Tier II of NAB

■ Tier I NAB ■ Tier II NAB
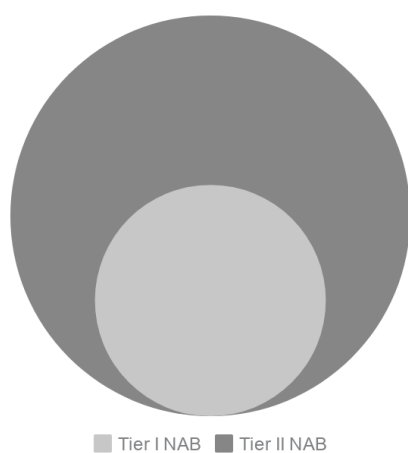
Source: Authors

Currently, banking is one of the most technology-oriented sectors in many jurisdictions. It can be assumed that structural changes in banking are motivating gradual adaptation of Tier I NAB and Tier II NAB (Amel & Jacowski, 1989). As an external factor, the increased pace of society, in general, is also useful in Tier I NAB adaptation (Tinnila, 1970).

Tier I NAB covers the overall global banking system. The total incumbent banking sector is experiencing NAB for the last three-decade through computer technologies they employed; non-traditional peer-toper services is the main characteristic of Tier I NAB. As can be seen from Figure 1, the Tier I NAB is an inner and relatively small tier of the NAB era. However, beyond Tier I NAB, there are more substantial opportunities based on math and artificial intelligence developments. Owing to this reason, considering NAB as a form of banking or a particular product has a conceptual bias. It even does not need to be considered as a futuristic offer.

In recent years, many banks have been engaged in informatics through the complete financial intermediation process. These banks are categorized under the Tier II NAB. The main difference between the Tier I and Tier II NAB is the employment of artificial intelligence to replace the workforce, which brings a particular differentiation in the services with solutionary consultancy.

1.1.   Significance of New Age Banking

Adapting to the significant development of technology, financial institutions—especially banks—are gradually transforming their entire system based on financial technology. As we mentioned earlier, there are two stages, namely Tier I and Tier II, through which banks are transforming their financial structure. However, a remarkable difference is evident between these two stages.

The primary purpose of Tier I is to enjoy the benefits of technological development by introducing new technology-based financial instruments. This stage introduces the human workforce with advanced financial technologies to facilitate the operational process and augment the efficiency of the operation. Also, through Tier I, bank tends to maximize their market share, minimize the human error in operation, ameliorate customer services, and increase the satisfaction level of customers.

On the other hand, Tier II aims to replace the aggregate human workforce by employing artificial intelligence (AI) in the incumbent financial system. Although the primary objective of this stage is to enjoy technological development similar to Tier I, the ultimate purpose of it is to replace the human workforce with AI, which may have a significant impact on the macroeconomic factors, especially on unemployment rate. Besides, due to the extensive use of AI, the bank's authority can easily bring the customers under the surveillance system, which could be a security issue. However, despite having these disadvantages, Tier II may boost the country's economic growth by increasing the tendency of entrepreneurship among people.

1.2.   Features and Future of NAB

According to the classical financial intermediation theory, the bank is a financial intermediary between the fund supply and fund demand entity. However, nowadays, the demand for banking is mainly on payment systems. Verily, this is the key reason behind the world's choice of developing NAB through technology and informatics. The mainstream trend towards digitalization also attracted the financial sector to provide efficient payment systems. Besides, it can be analyzed from the margin between deposit rates and credit rates that transaction cost has become higher than deposit rates. Because of this reason, there had been critics in the banking sector, which is another cause behind the trend on Tier II NAB.

In view of previous observations, it can be said that the banking sector was mostly focusing on enjoying computer technology under the Tier I NAB era, especially for better accounting experience. Whereas the Tier I NAB brought cost efficiency by reducing personnel expenses through replacing human resources, the Tier II NAB has come front to reduce personnel expenses by replacing human intelligence directly.

As has been noted earlier, technology and informatics are the main components for the development of NAB; these components are the keys for credit rationing for better allocation of funds that means significant support for the primary banking activity. The main cost of financial intermediation is credit intelligence for rationing. Here, NAB offers accessibility, data

mining, and cost-efficiency opportunities for banks. Accessibility is the key to marketing since technology is the main factor in expanding distribution channels in the modern world. Even though there are suspicions of potential security problems that may occur by employing high-tech, it is conspicuous that technology improves the security capability of banks. Indeed, increasing accessibility decreases the cost for the customers.

The cost has three dimensions for both banks and customers – i) success of intermediation, ii) employment, and iii) time. For example, card transactions in Turkey are processed within four seconds that can take minutes in total for both sides if realized in cash. The demand for NAB is increasing with the augmentation in payment systems. Besides, increasing computer and smartphone literacy among people is bolstering the increased demand as well. Furthermore, data mining and offering products and services to the customers by the banks is welcoming the necessity for NAB.

Since NAB is cost-efficient, its products need to be categorized under cost-reduction nature. Though many mid-scale software developers can invest the capital need for these services, new-age financial products are under banking monopoly in many jurisdictions. Besides its cost reduction effect, banks are charging fees for their new-age financial products.

The most important futuristic advantage of being a bank is the opportunity to offer new-age financial services and products. The main cost of banking is to have an organizational chart. With NAB, banks reach the optimum size of accessibility; everyone in the world becomes a potential customer and access center with a website or application. Shortly, the value of the banks will be calculated based on the number of registered users like social media companies.

New-age banking has four aspects: i) Accessibility, ii) Cost Advantage, iii) Time Efficiency, and iv) Security. Each service that has all of these four aspects is part of new-age banking activities. The advancement and acceptance of technology in the financial sector will trigger the high involvement of people (e.g., entrepreneurs) with this NAB. As a result, the competition will concentrate on new-age banking, and the trend will follow cost efficiency and alternative distribution channels for the following years in the short-term. However, in the long run, with the abolishing of fiat currency, the NAB will find its new route. In this process, cashiers and branches will be removed from the system/micro branches. Large regional branches will emerge, physical security costs will be discarded, and security software will be demanded. In addition, high insurance costs for branches will be removed, artificial intelligence may hold 70% of the current tasks, new competitors will emerge, and credit intelligence products will be demanded by real sectors.

In the near future, due to the welfare of NAB, the accessibility of E-check, E-cards, and E-POS will be available to ordinary people. The study also expects common use of temporary check/card, optimum transparency in the economy, easy and fast intermediation process, an increasing monopoly in the real sector—i.e., increasing volume, decreasing risk base, and increasing share of retail banking—, increasing fund stock by alternative competitors, shadow banking share, and crypto banks. Furthermore, under this NAB, the concept of "Banking-as-

a-Service (BaaS)"[4] has a significant potentiality to obtain broad acceptance and popularity because of its accessibility and customer-friendly nature.

Banking-as-a-Service is considered under the umbrella of open banking, a banking system which refers to a bank's initiative to open its Application Programming Interfaces (APIs) to third parties and allow them the access to the bank, either to data or to functionality (BBVA, 2019). BaaS provides access of its functionality to the non-bank companies in order that they can connect users and provide bank services without accessing the bank's existing platform.

2. Islamic Digital Banking and NAB

During the era of new-age banking, Fintech may play a vital role in expanding digital banking in the Islamic finance industry by improving cost-efficiency, transferring funds, cash deposits and withdrawals, and online transactions. Consequently, this improvement may develop the institutions of Islamic finance to be more responsive and receptive to adapting and embracing fintech solutions. However, according to the World Islamic Banking Competitiveness Report 2016 by EY:

> "Islamic banks have a much lower customer penetration in digital services compared to conventional banks. Although the industry is quite young, some Islamic banks are expanding their digital offerings quite quickly; however, most of these banks are still a long way from becoming truly digital as currently, many of them only offer some basic online services" (Kmeid, 2017).

As of 2018, the total market volume of digital banking was around $5.2bn in terms of assets under management; this volume is expected to grow more than 3% ($16.2bn) by 2025, based on a 15.3% compound annual growth rate (Maierbrugger, 2020). Though the Islamic finance sector is a bit slower in adapting and modifying its system to digital opportunities, it has gained momentum in the second decade of the 21st century. For instance, Meem[5] was launched in Saidu Arabia as the first fully-fledged Islamic digital banking services in 2015, supported by online channels, social media, and video contact centers in MENA. In continuation of this, in 2018, *insha* began its operation as the first European Digital Islamic bank by Albaraka Turk participation bank under Berlin-based solarisBank's umbrella, followed by Boubyan Bank, proclaimed as the world's best Islamic digital bank, and Qatar Islamic Bank, which has already developed a fully digital financing services arm (Maierbrugger, 2020). As a result, the Central Bank of Malaysia, Bank Negara Malaysia, is

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[4] According to Medici, "Banking-as-a-service (BaaS) is an end-to-end process where third parties – FinTech, non-FinTech, developers, etc. – can access and execute financial services capabilities without having to develop them organically." "BaaS involves banks providing third parties with access to core systems and functionality so that they can integrate digital banking and payment services into their own products." (Moneythor, 2020).

[5] "The digital banking arm of Bahrain-based Gulf International Bank (GIB), allowing Bahrainis to access Shariah-compliant retail banking services online in an era where digital technologies are altering the consumer behaviour and redefining financial services".

expected to join in this rally of new-age banking by unveiling its digital banking framework (Roslan, 2019).

Recently, a significant number of researchers have analyzed Islamic banking from the digital aspect. For example, Zouari & Abdelhedi (2021) analyzed the impact of digitalization on the customer satisfaction of 145 Tunisian Islamic banks by applying factor analysis and regression analysis. The study found a significantly positive relationship between customer satisfaction and customer service quality's key dimensions, excluding tangibles. Riza & Hafizi (2020) examined the attitudes of customers in regards to Islamic mobile banking acceptance by considering the Technology Acceptance Model on 179 users who enjoy the Islamic mobile banking services in Central Java and Yogyakarta. The findings revealed a positive perception of the customer in order to the acceptance of Islamic mobile banking. Ananda, Devesh, & Al Lawati (2020) studied the encouraging factors for adopting digital banking, both Islamic and conventional bank, using a multiple linear equation model. In this case, they used a sample size of 200 retail banking customers' responses and found a significant positive impact of awareness, perceived usefulness, and web features on the digital banking adoption of customers.

Furthermore, other studies focused on different areas of digital banking; e.g., Lestari (2021) analyzed the regulations toward digital branches of Islamic and conventional banking, Jamaruddin & Markom (2020) investigated the Islamic fintech application in Islamic banking, and Hassan, Shaikh, & Kayhan (2020) discussed the digital era and Islamic banking. There are many more that also concentrated on the digital aspect of Islamic banking and Islamic fintech. In this continuation, the following section analyzes Europe's first full-fledged Islamic digital banking, known as *insha*.

3. Case Study: Insha
3.1. Background

The emergence of financial technology (Fintech) has trembled the concept and establishment of overall financial institutions' operations and activities across the globe. Although this is a new concept to a significant number of people, it has a long history starting with the inauguration of credit cards in the 1950s. Later, the replacement of ATM instead of teller and branches affixed a significant pillar in the development of this sector (Desai, 2016). In the early 21st century, the industry experienced a revolutionary improvement in terms of retail financial services consisting of mobile wallets, payment apps, robo-advisors services, online crowdfunding platform, and peer to peer lending platform. This development of Fintech did not just adjoin various platforms and services; instead, it has superseded the position of financial institutions by significant participation of customers.

With this evolvement of Fintech, *insha* has been inaugurated as the first European Digital Islamic bank by Albaraka Turk participation bank. It is a digital banking service platform where customers have the opportunity to make all their money-related transactions safely and securely. Although a considerable number of people would be hasty to argue that Islamic

digital banking could be the solution to comply with the growth of financial inclusion, very few of them have applied the concept of fully-fledged digital banking into their everyday economic and financial activities. Reportedly, only six fully-fledged Shariah banks are currently running their operations in the UK, where most of them are involved in the corporate and business markets (Belouafi & Chachi, 2014). Only one Islamic bank is operating its activities in Germany, and another bank is struggling to launch out of Luxembourg.

The foundation of *insha* is based on Berlin-based solarisBank's BaaS platform, which provides all the core digital banking services— i.e., transactions, accounts, and the process of identification—as "modular white-label services that are integrated directly into the *insha* app via API". As a result, it did not have to build core banking services in line with foreign regulation, apply for a banking license, and create a subsidiary (Bessenbach, 2019). *insha* is the first digital Islamic bank in Europe that provides Shariah-compliant services to customers in Germany—e.g., banking account, debit card, and transfer of money to nations in the Single Euro Payments Area (SEPA) (see *Figure 2*) and Turkey (EPC, n.d.). Notably, there is a multilingual call center that supports this platform. Nowadays, it is experiencing significant traction; for instance, over 9000 times downloads of this app have been recorded within two months of its inauguration. Although the operation of *insha* is currently Germany-based, the expansion of its operation to seven other countries in Europe is in the process.

**Figure 2: Money transfer to nations in the Single Euro Payments Area (SEPA)**

Source: European Payments Council

3.2. Market Segmentation

Due to being the first Islamic digital banking platform, *insha* has enormous opportunities to gain a significant market share and promote the concept of this platform all over Europe. Accordingly, it already has an extensive plan to diversify its product in terms of business

banking instruments. However, because of the fragmented concentration of Muslims in the entire region, this Islamic digital banking platform has become challenging to penetrate despite having a significant potential market (around 20 million Muslims). Currently, in the process of market expansion, the start-up is endeavouring and working on penetrating Austria, Belgium, France, Italy, the Netherlands, Poland, and Spain (see *Figure 3*) within the next year – despite having little to no Islamic financial activities in all markets. If *insha* can successfully penetrate, Shariah complaint finance may experience a new wave of development across the European markets.

Figure 3: Targeted Markets of insha
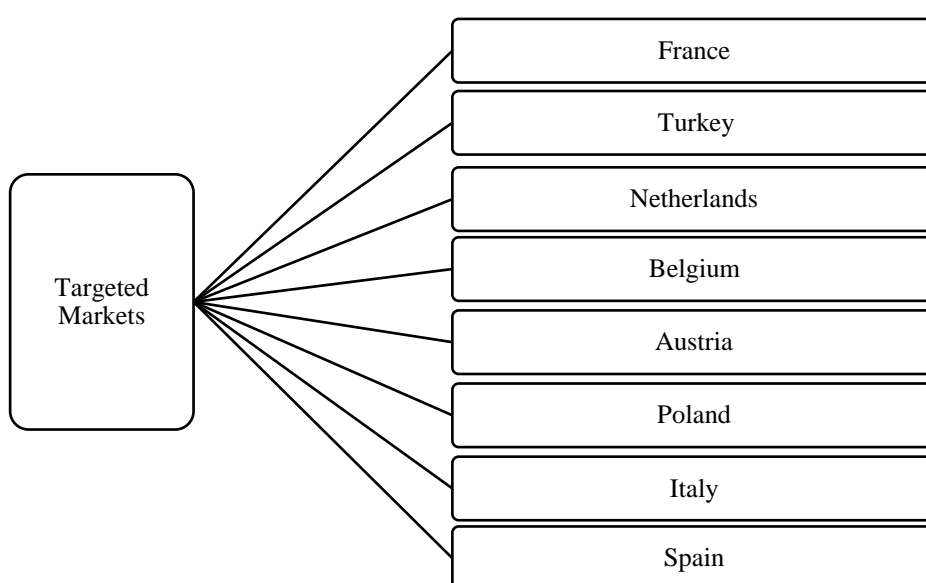
Source: insha GmbH (Formatted by Authors)

3.3. Potential and Facilities

- One of the significant strengths of *insha* is to have the tag of the first Islamic digital bank in Europe; as a first mover, it enjoys the benefit of gaining a significant market segment.
- *insha* signifies an opportunity to solve the issue of a narrow customer base due to geography as well as offers banking services (Shariah-compliant) to the growing Muslim population of Europe.
- As being the first company in the Islamic digital banking platform, brand name recognition strengthens *insha*'s credibility in the Islamic digital banking sector.
- Offering branch-free banking facilities makes life easier for customers. Therefore, they neither need to bring physical documents nor go to the branch of the bank.

3.4. Infrastructure

Where none of the company has experienced the test of success, literally failed, *insha* has managed to expand its services at a relatively low cost (see *Table 1*) within a short period. Undoubtedly, this expansion is due to the collaboration with SolarisBank. This cooperation of

bank-to-bank, which is considered as the first in the digital banking sector, helped to save approximately EUR4.5 million (US$5.13 million) as the start-up cost and curtailed more than half of the time-to-market (Dinc, 2019).

Generally, obtaining a banking license requires EUR5 million (US$5.7 million) in the capital in Germany; the process takes between 12-24 months (Dinc, 2019). However, *insha* bypassed all these impediments by using SolarisBank's banking license and API, paying only an installation fee to the Berlin bank. Noticeably, the platform was built by the team within a short time (less than one year); it accepted its first customer within six months.

To protect and secure customer's provided information and be transparent, *insha* has a privacy policy that extensively elucidates all dos and don'ts for both company and customer. *Figure 4* summarises these privacy policies.

Figure 4: Articles of Privacy Policy of insha
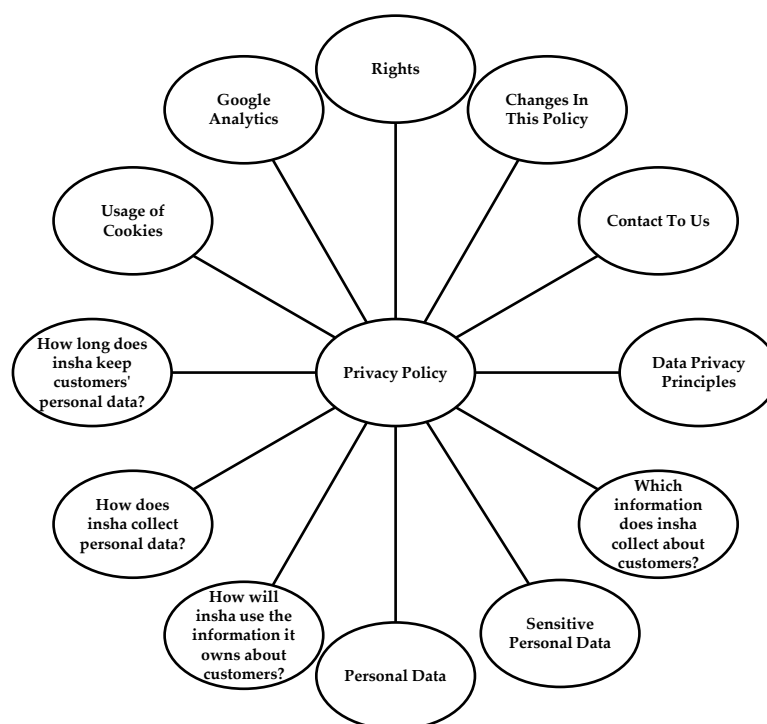
Source: insha GmbH (formatted by authors)

3.5. Costs of Services

insha provides numerous services to facilitate customers by receiving a mere service fee (see *Appendix 01*); even many services do not have any service charge at all, such as monthly fees of account and Matercard, card transaction in EUR in the SEPA-region as well as Sweden, first card printing fee, card transaction in Germany, first three withdrawals in Germany, and up to 10 transaction (Monthly), other card transactions in the SEPA-region.

3.6. SWOT Analysis

Yusuf Dinç, Ruslan Nagayev, Rashed Jahangir

This section elucidates a SWOT analysis based on the earlier discussion on *insha*'s infrastructure, market segment, pricing, and regulations. The purpose of employing this analysis is to comprehend the nature of the platform better, ascertain the strengths and weaknesses of the platform, understand the threats and opportunities, and finally develop business strategies and policies for the platform. Table 2 summarizes the strengths, weaknesses, opportunities, and threats as follows:

Table 1: SWOT Analysis of insha

Strengths	Weaknesses
- Banking with values and principles. - Maximum cost transparency and efficiency (see *Appendix 01*). - Eco-friendly and sustainable. - Intuitive handling, versatile features. - Impressive design. - Account opening in less than 10 minutes. - Deposit guarantee scheme. - Charitable donations made easy. - Achieve savings goals successfully. - Real people, no bots. - Cash withdrawal at ATMs. - Perfect data security. - More freedom, more flexibility.	- Less accessible for baby boomers. - Vulnerable relationship between bank-customer. - Low credibility of the customers. - Lack of personal human touch. - low awareness level among customers due to the digital divide in the society. - Arduous for financially vulnerable individuals. - A significant concern for confidentiality and integrity of data and information over the internet. - Islamic financial literacy of employees.
Opportunities	**Threats**
- To provide user-friendly access. - Increasing Muslim Community. - Integration with an established and renowned bank, e.g., solarisBank. - Financial inclusion.	- Security vulnerability, e.g., intrusion of hackers. - Augmentation of Islamophobia. - Conventional counterpart. - Deficiency of customer loyalty. - Lack of legal and regulatory framework.

Source: Authors

Strengths

One of the core strengths of *insha* is its principles—i.e., following interest-free banking principles, which broaden the choice of customers, both Muslim and non-Muslim. Due to its online operation nature, the bank does not need to use papers that passively contribute to the protection of the environment and reduce the cost of documentation. Alongside, user-friendly

features (for example, maintaining credit limit by few clicks, controlling debit cards by locking and unlocking any time, and checking real-time banking activities and receiving notifications) also attract and gain the trust of customers. In a nutshell, the bank provides freedom by offering customized products and features that ensure the flexibility of customers with the operation of the bank.

Weaknesses

Indeed, digital banking is a blessing for Gen Y or millennials (people who were born between 1980 and 1994) and Gen Z (people who were born between 1996 and 2015); however, the baby boomers (people who were born after World War II until 1964) are less adaptable to the technological development of banking. According to Eurostat data, "there were approximately 102 million Millennials living in the EU, roughly 20% of the population, while the Baby Boomers accounted for a larger share (23.4%) in 2017" (Ferrer, 2018). This percentage is significant for the banking sector. Along with the technological know-how, lack of Islamic banking literacy is also a shortfall for the bank.

Opportunities

The user-friendly features of different products of *insha* open a door for future expansion of the bank and augmentation of the customers' number. Besides, the unique principle of the "interest-free" concept strengthens the bank's foundation among the conventional banks in Europe, and it has become more vibrant due to the significant growth of the Muslim population in the region. Most importantly, the integration with solarisBank has bolstered the bank's operation and provide confidence to the target customers.

Threats

Although digital banking has triggered transparency and flexibility in the banking sector, security issues are still a concern—i.e., cybercriminals or security hackers may breach the firewall of the banking system and embezzle with the funds of customers. Noticeably, this threat not only for *insha*, but for all digital platforms currently running their operation based on the internet. On the other hand, the spread of Islamophobia across Europe is one of the significant threats for *insha* to attract customers.

In a nutshell, the penetration of Islamic digital bank, *insha*, has added a new dimension to Europe's banking sector. Customers have the opportunity to experience a new dimension, interest-free banking, which has ensured the banking sector more competitive than before. However, even though few threats exist in the current market, the strengths and opportunities of *insha* conspicuously show a promising and prosperous market for the Islamic digital banking sector in Europe.

Conclusion

The study aims to provide details about the New Age Banking (NAB) as well as the first systematic account of Europe's first fully-fledged digital Islamic banking service. At the

beginning of the paper, it discussed the Tier I (computer-technologies-oriented banking activities is the main element) and Tier II NAB (informatics is the crucial factor). Whereas the Tier I NAB brought cost efficiency by reducing personnel expenses through replacing the workforce, the Tier II NAB has come front in order to reduce personnel expenses by replacing man intelligence directly. The reason behind this discussion is the advancement of technology and its acceptance in every sector across the globe, especially in the financial sector. Nowadays, the implementation of advanced technologies has become an integral part of the global financial institutions, especially in the banking sector; it is becoming challenging to figure out the banking sector without implementing the most advanced technologies. The financial technologies that have been implemented so far are the initial steps of the NAB era.

In the latter part of this paper, a case study on *insha*, the first European digital Islamic bank by Albaraka Turk participation bank, has been analyzed by providing comprehensive information about the platform. To bolster the provided information regarding NAB, we described the functions, features, and concurrent market conditions of *insha*. Although *insha* is currently available only in Germany, it plans to expand its interest-free services to seven other European countries.

The study also mentioned the ethical issues regarding digital banking since it is one of the most critical aspects of digital platform—the intrusion of hackers a common phenomenon in such kinds of platforms. In fact, this ethical issue even more alarming in the case of digital banking. The absence of specific laws and regulations also creates significant ethical issues that open the door for other intruders. Because of this limitation, a client of digital banks may experience hazardous ethical issues.

Policy Recommendation

1. Generally, the wisdom behind innovating and launching new financial products or services is to facilitate people and contribute to the development of an economy. Therefore, the purpose of Tier I and II NAB should not be replacing the workforce and human intelligence; instead, the bank should strengthen human capacity by amending these two stages.

2. Being the first Islamic digital banking platform, *insha* has considerable opportunities to gain a significant market share and promote the concept of this platform all across Europe and the world as well. In doing so, the platform should concentrate on the culture-friendly promotional program without violating any fundamental principles of ethics, in other words, the Shariah.

3. In order to gain the trust and confidence of customers, the *insha* authority should emphasize on establishing legal regulations recognized by the government of the respective countries.

4. To secure the banks, customers, and other stakeholders' database, the bank should have a special three-layered in-house tech team who will particularly be assigned to protect the server from any intrusion of hackers and other malicious attacks.

5. Along with the development of regulations, they should prepare and offer various programs (paid or unpaid) – e.g., training, workshops, seminars, symposiums, and conferences – to students for enhancing Islamic digital banking literacy.

6. The top executives and mid-managers of this platform should have a strong background in terms of Islamic digital baking; simply put, they should have a clear understanding of Shariah issues. Likewise, employees should also have a conspicuous understanding of the interest-free concept and system.

7. *insha* should have an extensive focus on research and development (R&D) for the frequent innovation of products and services so that they can immediately come up with new ideas when the number of competitors increases.

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Appendix A

Monthly Fees	
Account	0 €
MasterCard	0 €
One Time Fees	
Card Printing Fee (For the First Card)	0 €
Card Printing Fee (For Each Card After the First Card)	6 €
Payment*	
Card Transaction in Germany	0 €
Card transaction in EUR in the SEPA-region as well as Sweden	0 €
Other card transactions in the SEPA-region	0 €
All other card transactions	1.2% of the Transaction Amount
Withdrawals**	
First 3 withdrawals in Germany	0 €
After 3 withdrawal at an ATM in Germany per withdrawal	2 €
For the cash withdrawal at an ATM in the SEPA-region (except Germany, Switzerland, Andorra and Monaco)	2 €
For the cash withdrawal at an ATM in Switzerland, Andorra and Monaco	2 €
For the cash withdrawal at an ATM in all other countries ($ Currency) (<200 Eur)	1.75 €
For the cash withdrawal at an ATM in all other countries ($ Currency) (200< Amount <300 Eur)	3 €
For the cash withdrawal at an ATM in all other countries ($ Currency) (>300 Eur)	5 €

SEPA Money Transfer	
Up to 10 transaction (Monthly)	0 €
After free 10 transfers per transaction	0.25 €
Turkey Money Transfer***	
0 — 500 €	4 €
501 — 1,000 €	5 €
1,001 — 2,000 €	6 €
2,001 — 5,000 €	7.50 €
5,001 — 10,000 €	12.50 €

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note: *the maximum daily limit for card transactions is €1,500, and a monthly limit for card transactions is €3,000; **the maximum daily limit for cash withdrawals is €1,500, and a monthly limit for cash withdrawals is €3,000; ***the maximum daily limit for money transfers is €10,000.

Rational Behaviour in Islam (Islamic Rationalism): A Critical Evaluation of the Extreme Rationality Assumption

Salma Abdellatef[1]

Abstract

Rationality, as an inherent doctrine in mainstream economics, has received waves of criticism throughout the history of economic thought and the rising of modern economics due to the inadequacy of the classical and neo-classical "homo-economicus" prime axiom in reflecting reality. Moreover, the conventional rationality concept shortfalls in being convenient to the framework of Islamic economics. As an extension to the existing critical literature studies, this paper aims at proposing a new approach in analyzing rational human behavior in Islam economic framework, including the introduction of a well-being function where an Islamic rationalist is not only a utility maximizer but also a morality maximizer who aims at maximizing his utility in the worldly life and the hereafter. Additionally, the paper includes empirical evidence against the "Rational Choice Theory". By analyzing the answers of 363 participants from Turkey concerning their purchasing motives, participants, according to the conventional mindset, are making irrational decisions due to external factors, that were negligible in the conventional theory, such as advertising, social environment, addictive tendencies, and mood swings.

Keywords: Rationality, satisfaction, utility function, well-being, Economic man, Islamic economics.

JEL Codes: D01, D10, D11, D12, D91

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Introduction

Throughout the history of the economic theory's development, the rationality concept and the fictional "Economic Man" or the "Homo-economicus" have taken their inherent places in the economic thought as the centerpiece of the human behavior analysis, even if the term "Homo-economicus" was not existent. Self-interest pursuance was the justification that flourished the motivation of any economic agent since people know best what is the best that suits them, where that self-interest is the fountainhead of their decisions and actions. Moreover, Sponsoring the economic man as the main principle upon which almost all modern economic models came with a belief that such behavior would be accompanied by positive social outcomes. Economists starting with Adam Smith supported that society will maintain unintended prosperity and its interests will be promoted when people are left alone in their self-interest pursuance due to the " Invisible hand" of the perfect competition market.

Despite the fact that most economists still commit to the pure theory and its rational behavior assumption, some diverse views formed an analysis for rationality that was based on pecuniary self-interest and internal consistency, where rationality still was to be evaluated according to self-interest, leaving no space for one's values, life objectives or non-pecuniary motivations to be involved in human behavior analysis. Therefore, such factors are to be cast out of the economic capitalist system due to it being unquantified. Additionally, with the rise of positivism whereby no value judgments were accepted, economics as a science deviated away from ethics. (Chapra, 1992)

According to this previously mentioned context, a consumer can decide to spend too little on his family and showing a high tendency to save; a behavior that is considered an act of greediness in common language, and economically leads to a low rating in the well-being graph, but rational in economic theory since it involves maximizing the utility of a consumer. A producer's behavior that aims at profit maximization is a rational rigorous homo-economicus even if the production included resources misutilization, harmful environmental externalities, or unfair wage schemes. (Furqani, 2017; M. A. Khan, 2020).

The failure of the "Rational Choice Theory", which embodies people as computers rather than humans aiming at the self-interest, to address the emotional, ethical, and psychological elements in the human behavior analysis led to the rising of several alternative theories mainly by psychologists and behavioral economists that emphasized that individuals' decision-making process is governed by their relatively limited non-calculative power of reason, taking into consideration people's psychologies, values, and social surroundings in determining their motives that might be irrational in the conventional context.

From the point of view of Islamic economics, the conventional economic man does not suit the Muslim social or political society's setting, thus Islamic economists are reluctant to accept the conventional rationality concept according to the aforesaid, therefore, the conventional analysis would not be applicable.

All things together, this paper aims at critically reviewing the concept of rationality in mainstream economics and its development throughout economic history, followed by views of some Muslim economists concerning human rational behavior from an Islam perspective. Additionally, the paper attempts to introduce Islamic rationalism by proposing a well-being (utility) function for an Islamic rationalist.

Besides, another objective of this paper is to introduce empirical results of a survey conducted in Turkey with the aim of disqualifying the "rational choice theory" applied to one side of our analysis of human behavior which is consumers purchasing motives. The descriptive statistical analysis of the data for 363 respondents living in Turkey shows patterns of "irrational behavior" where factors as advertising, social environment, addictive tendencies, mood swings played a significant role in their decision-making process, which is opposed to mainstream rational behavior claims.

1. Literature review

1.1. Classical Rationality

Ancient Greek philosophers as Aristotle, Xenophon, Plato, and others elaborated the concept of rationality, clarifying that a rational manner is conducted in a virtuous public life where individuals' economic behavior becomes rational when they are thrifty using scarce resources to achieve praiseworthy ends. They propagated the idea of a household (Oikos) that earns for the property of his body, family, and who forms a surplus- or wealth- to help his relatives and acquaintances. (Leshem, 2016).

Joseph A.Schumpeter referred to a glimpse of the foundations to the economic rational man in the context of household management in the sixteenth century and later, specifically mentioning the concepts of "rural and domestic economics" by Johann Colerus (1593-1607), and *L'Economo prudente"* (1629) by Bartolomeo Frigerio or what he described as the precedent of the Economic man concept (Schumpeter, 1954)

Thomas Hobbes presented his views on rationality in 1651 in his book "leviathan" stating that humans are self-interested passion-driven while pursuing their desires' satisfaction. However, he differentiated between these desires and humans' rational calculations to achieve them since according to him, humans are driven by their passion rather than reason. (Van Mill, 1994). Within his proposed "social contract theory", Hobbes proposed a moral visualization of rational agents who accept cooperation and behave morally within civil society. (Nunan, 1989). Forming a buying decision in the Hobbesian model is influenced by the people's aspirations and values regardless of their ties to other members of the social formations they belong to.

The rational man has not been revealed yet as a concept, however, It was Adam Smith to dig the roots of it as a concept after the middle of the seventeenth century, parallelly with the emergence of individualism, resulting in the "Rational Choice Theory" that directly correlates the "Utility Maximization" theory, to be one of the foundations of the classical school of

thought. The economic system of the classical school of thought that was led by Adam Smith, John Stewart Mill, Richardo, and the advocates of the political economy stream at that time emphasized individuals' rationality as driven by self-interest and love, where the latter forms the motivation of their actions and decisions. In other words, economic rational agents are supposed to maximize their expected utilities unconditionally whether they are consumers or producers.

In his book " An Inquiry into the Nature and Causes of the Wealth of Nations", Adam Smith emphasized the role of the individual in his pursuit of labor and his capital employment in a free market economy. For him, an individual indeed does not aim at enhancing the public interest, but he only aims at his own security and gain. Accordingly, thanks to the invisible hand, individuals are promoting an end without their prior intention. (Smith, 1776). Moreover, as quoted from "The Theory of Moral Sentiments", Smith states: " Every man is, no doubt by nature, first and principally recommended to his own care and as he fitter to take care of himself than any other person, it is fit and right that it should be so. Every man, therefore, is much more deeply interested in whatever immediately concern himself, than in what concerns any other man". (Smith, 1853)

Bentham's Utilitarianism principle "the greatest happiness for the greatest number", represented an extension to the classical self-based Economic man who, as he saw, acts rationally aiming at happiness, and whose utility is maximized by maximizing the net balance between attaining pleasure and avoiding pain. (Bentham, 1823). Unlike the classical view of rationality, Bentham saw that an individual's rational choices are consistent, or in other words connect to the ultimate end of happiness for all members of the society, insisting on the fact that humans can do mistakes in their rational attempt to choose. Additionally, he stated that sympathy towards others can be a motive to action (Quinn, 2016). Despite his discussions regarding the quantification of utility and the law of diminishing marginal utility, identifying a relationship between psychology and political economy distinguished his economic contributions.

The thoughts of John Stuart Mill regarding economic rationalism were expressed basically by identifying the "desire of wealth" as the only motive to humans while behaving during their economic activity with a minimum of labor and self-denial. The reason and sober calculations of chances were two main determinants of rationality for Mill. (Zafirovski, 2008). He stated that in our pursuit of attaining utility, rational and non-rational considerations are involved. Moreover, he anchored the basis for bounded rationalism by expressing that an economic man's psychology shall be manageable in a society of precise social surroundings. (Zouboulakis, 2005).

In the light of the aforementioned, and before the 1870's marginal revolution, rationality as a base for analyzing consumer's behavior, was a more simple and limited concept, after which it started to be driven away from being a socio-economic concept that evolved from the enlightenment ideas of reason's sovereignty and happiness attainment to utilitarianism with

its moral and a psychological tendency until it completely faded with the neoclassical instrumentalist "Homo-economicus".

1.2. The Neoclassical "Homo-economicus"

The utilization of the term" Homo-economicus" or the rational man of calculations appears in the late nineteenth century in the neoclassical writings of the well-known marginalists as Jevons, Walras, Menger, and their followers. Their Rationality relied on utilitarian psychology or, in other words, the utility principle and the calculus of pleasure and pain for economic actors. Jevons connects to Benthem, as according to him, rationality is all about the relations of pain and pleasure that can be treated mathematically in their quantities and relations, depending on the diminishing law of marginal utility and agents' rational choices. (Jevons, 1879). Besides the marginal utility analysis, Rationality for Walras is interpreted in terms of scarcity as a determinant of individuals' choices. Similar thoughts were shared by Menger as well, where all have treated utility as measurable in units, that by observing its effects that are translated in the decisions of individuals, and the effect of that on the market. (Moscati, 2013). For them, a rational utility maximizer (a producer or a consumer) is restricted to the budget constraint, which initiated the possibility of having a general equilibrium in the economy as a basis for their analysis. (Arrow, 1986). Also, The contribution of Edgeworth is considered an extension to the Benthamian utilitarianism, by stating that the end of rational action is the accumulation of pleasure whether being from self-interest or charitable motives. He argued the significance of social utilitarianism and rationality based on others' interests or public virtues that exist along with individuals' private rationality.

Pareto played a significant role in switching from the utilitarian theory between 1899 and early 1900, wherein his rationality depended on the consistency of human choices and their effects on one's self and others while developing the "Pareto optimal". Although his interpretation was away from the concept of utility or its measurement, he replaced the cardinal utility function with an ordinal one, clarifying that economics can not depend on psychological assumptions. He was criticized for being inconsistent due to keeping the concepts and definitions of the utilitarian theory although he regarded utility as immeasurable. (Bruni, 2010).

In the following incidents, rationality reconstructions in understanding individuals' preferences and new utility functions have been carried out. Firstly, Hicks and Allen (1934) criticized Pareto's inconsistency in their utility analysis, stating that marginal utility can not be defined quantitatively if the total utility is not. They went out with the rate of substitution as a new base for the utility function analysis. (Hicks & Allen, 1934).

Keynes (1936), as an extension of his views about rationality in his book "A Treatise on Probability", emphasized that people are rational "wild animals", who can perform reasonable calculations upon their optimistic or pessimistic foreseen probabilities due to their lack of information, trying to foresee gains and losses to choose between alternatives.

However, he stated that this process shall be disturbed sometimes with people's motives, feelings, or chances without relying much on irrational psychological reasons. (Keynes, 2018).

Samuelson in 1938 introduced the "revealed preferences" theory based on his idealized "Homo-economicus", who make consistent decisions aiming at maximizing his utility, and that utility can be optimized mathematically if that agent is a consumer. He stated that holding incomes and prices constant would contribute to understanding people's consumption choices (Samuelson, 1938).

The aforesaid ideas reveal the fact that any psychological or sociological aspect has been cast out of the rationality concept with the rising of positivism and consumer sovereignty by the marginalists, leaving us with the idea of an economic rational man who holds the control, willpower, and selfishness in the market, and takes his decisions according to his preferences with the information he has just like others. A situation where emotions, religion, ethics, and humans psychology are not involved in the equation. That man seems to be more close to being a fiction than human reflecting reality.

Following that and in a gradual movement towards the psychological and ethical notion, Von Neumann and Morgenstern's "expected utility" theory represented modest and impressive results compared to the previous rational behavior theories as described by Herbert Simon, and on which he built his " Bounded Rationality" later on. (Simon, 1945). According to (Morgenstern & Von Neumann, 1953), the aim of all economic participants, whether they are consumers or entrepreneurs, is money, however, a rational decision of an individual (a player) in his pursuit to the optimum position (satisfaction), should be the one that maximizes his expected utility of the option that is most probable to lead to the wanted outcomes. That optimal decision is to be made after ranking one's alternative preferences and foreseeing the possible risks since we live in a world of uncertainty, not a perfect information one.

Herbert Simon expressed his views on rationality away from the classical economic man of the neo-classics. For him, a rational man is an agent whose decision-making process between options is bounded or restricted by limited knowledge, access to information, and calculative computational limited capacities of regular humans. Simon, as well as (March, 1978), among other behavioral economics founders, considered that rationality can exist behind a specific choice even if it is not a utility-maximizing decision.

The contemporary founders of behavioral economics Kahneman and Tversky in their continuous collaborative work that was initiated in 1979, provided a "map for the bounded rationality". Their work criticized the unrealistic normative theories about rational agents from a psychological perspective, introducing an alternative approach to understand humans' behavior. In their "Prospect Theory", Rationality consists of two systems, the first is reasoning that includes intentional efforts by humans to perform regular calculations that are exposed to systematic errors such as computing a tax, and the second is the spontaneous intuition and feelings that come to our mind which can be vulnerable but it affects our preferences and decision-making process eventually, taking into consideration that agents are to make

economic decisions in the situation of uncertainty and risk prevailing in the real world. (Kahneman, 2003). They added that the aim of agents is not wealth in its absolute meaning, but it is the utility from changes in wealth since a certain level of wealth might be great in value for a person and not for the other. The alteration performed on the expected utility theory by Kahneman and Tversky concerning the process through which people evaluate probabilities enabled their theory to be applied in different areas of economic activity due to its reliance on experiments that support the heuristics process supported by them. (Soukup et al., 2014).

On an aggregate level, the economic rationalism concept has been discussed in the frame of microeconomic policy discussions during the 1980s and the 1990s in Australia mostly while criticizing the free-market mechanism. (Quiggin, 1997) defined economic rationalism as the domain of activities where moral considerations have no role, only rules of business that rely on self-interest dictate. (Pusey, 1991) as well described economic rationalism is a doctrine where markets and money can do better away from government intervention, bureaucracies, and law. Then, behaving consistently with that concept will be by pursuing the main life goal of a conventional self-based rationalist which is the acquisition of wealth, followed by making "rational" decisions through strict calculations while utilizing that wealth to maximize one's utility, in the absence of religion, morals, social values considerations, or government intervention.

Economic rationalism in that context has been criticized widely, but according to what serves the objective is this paper mentioning, (Wright, 2003) stated that being rational depends on what individuals want to achieve and which values they rely on.

As far as empirical results are concerned, classical and neoclassical economists failed to introduce empirical results concerning their view of their "homo-economicus" who makes rational reasonable decisions under the prevailing classical and neoclassical theories of rational decision making and preference order. However, evidence as Sippel's (1997) that included testing consumer rational behavior's consistency with Samuelson's revealed preference theory, he found that most of his sample participants acted "irrationally" according to his four assumed axioms of rational behavior that are completeness, transitivity, insatiability, and convexity, which contradicts the neoclassical utility maximization consumer behavior constraint by his budget.

To sum up, among the several unrealistic assumptions of the classical and neoclassical economic theory, The rationality assumption faced, and still facing, wide waves of criticism as illustrated in which the rise of behavioral economics played a significant role in introducing a new perception of defining people's rational behavior. However, people's psychology, ethics, morals, and the interests of society have been put aside in our previous review. Moreover, mainstream textbooks' selfish utility-maximizing agents who think at the margin, remain the main approach for economic analysis in economics. According to Hill & Myatt, even though behavioral economists attempt to bring the concept of rationality closer to reality,

by identifying limited (bounded) rationality, selfishness, and willpower for humans, no behavioral economist would think that his/her analysis should replace the conventional one. (Rod Hill & Tony Myatt, 2012).

1.3. Rationality in Islamic Economics

Unlike the political-economic doctrine of the west on which the conventional economic theories exist and through which economics as a social science emerged, the experience of Muslim history confirms religion to be the basis for the organization of political, economic, and social behavior. (Zaman, 2008). Islam, amongst other religions, has set the clearest moral, social, political, and economic principles for its state to be established. Approaching Rationality from an Islamic perspective is one of the main significant differences between conventional and Islamic economics since the existence of self-motivated calculative homo-economics is not only a trail of imagination, but also a repulsive character in Islam.

The general concept of rationality or the rational man's behavior in the scope of Islamic economics has been previously discussed in several studies. Despite the unique additions of each study, Islamic economists and thinkers agree that the selfish economic man who only pursues his economic activity as a consumer or a producer attaining solely the materialistic utility or profit is a distorted picture of a human being that does not fit the moral and ethical framework that an Islamic economic system should operate within.

Al-Shaybani, Al-Ghazali, and Al-Shatibi were the earliest scholars discussing human behavior from an economic perspective. Al-Shaybani (132 - 189 A.H./ 750 - 804 C.E.) in his book "Kitab Al-Kasb" elaborated the basics and rules of seeking sustenance or earning a livelihood, which represent human economic-driven behavior. He discussed that humans are obligated to seek sustenance to cover their needs or practice their religious ritual duties. As far as spending is concerned, he divided the spending into three types, the imperative, the recommended, and the permissible. The imperative covers people's basic needs of food, clothes, shelter, health, education, transportation, and even debts, in addition to trying to save some for the future. The recommended, with which one's dependents, family members, and close relatives are covered. Lastly, the permissible is what expands beyond one's family to hold an economic responsibility towards the whole society. Further, he clarified that the expansion of earning will hold its legitimacy if it includes the maintenance of other people's provision, therefore leads to the public welfare that will enhance the aggregate wellbeing of the whole society. Both the recommended and permissible earnings will maintain social spending that is directed to the community, leading people themselves as spenders to improve their faith and ethical returns. So for Al-Shabani, it can be concluded that a man who covers his needs and contributes to the betterment of himself, family, relatives, and the whole society is the desired rational human behavior to be attained. (Al-Shaybani, 1997)

Al-Ghazali (450-505 A.H. – 1058 -1111 A.C.) and Al-Shatibi (720 - 790 A.H./1320 - 1388 C.E.) provided similar interpretations to Al-Shaybani's views of human economic behavior, however, both utilized the concept of "Al-Maslaha" in the scope of fulfilling Maqasid Al-

Shariah (necessities, needs, and complementaries) in their reference to the main objective or goal of humans.(Al-Ghazali, 2008; Al Shatibi, 1997). As well, both had divided humans into three categories according to their pursued economic activity that aims at fulfilling the "Maslaha", overall utility or well-being but in a slightly different manner.

According to Al-Ghazali, economic agents have their ultimate goal as the hereafter, however, they have three economic goals that represent a part of one's religious imperative duties: they are self-sufficiency, enhancing the well-being of one's breed, and assisting people in economic need. He also divided Humans into three: the losers who ignore the hereafter completely, the successful who focus on their hereafter at the expense of worldly life, and the middle-pathed ones who pursue an economic activity upon the Shariah law, and those are the attainers of salvation. (Ghazanfar & Islahi, 1998)

Al-Shatibi provided a further explanation similar to Al-Ghazali's, but instead of the "Rational Man", The "Righteous Actor" whose objective is similar to the objectives of Al Shariah is proposed. Al-Shatibi ranked that actor into three levels from the highest in righteousness to the second and third. At first, the one who considers all of his acquired earning to be a right for others ignoring his self-interest completely. The second is the one who only considers himself as a safe-keeper of his wealth, taking from it only if he is in need, otherwise, he will not. The first and the second can be represented by a trader, who obtain the minimum profit in a deal for the benefit of these customers since they consider themselves as agents for others, not for themselves. The third is the actor who accepts the permissibility of taking from his wealth what exceeds his needs to obtain what is not prohibited. (Al Hasan Biraima, 1998).

As observed, the former identified maximizing the overall wellbeing as the base for the human behavior that was affected in some aspects by altruism or "Sufism" tendencies which was an inseparable part of the Islamic economic thought that era. The Modern emergence of Islamic economic thought started after the first quarter of the twentieth century with several Muslim economists and scholar's writings that were related to the development of Islamic economics and finance (Islahi, 2014), which included views on the rationality assumption of the conventional economic theory.

Siddiqi (1972) defined a rational Islamic man as an individual whose behavior shall be pursued to attain maximum accordance with the Islamic principles. Additionally, he clarified that the core difference in that Islamic rational behavior is that it does not necessarily include maximization since a Muslim consumer or producer will behave conformal to Islamic standards, thus any contradiction between self-interest maximization and those Islamic values will be determined in favor of Islamic standards.

Monzer Kahf preferred to focus on Islamic rationalism as the maximization of Al-Falah (ultimate success) by a consumer or a producer as opposed to the maximization of self-satisfaction. The decisions of the believer will be classified as rational when it is consistent with the Islamic values. (Kahf, 1980)

(Mannan, 1982) also elaborated that a successfully implemented Islamic socio-economic system depends on an "Islamic person" who is guided only by Islamic rationality in which that "economic man" is incorporated and unified with the moral and social setting of Islam. A setting that would also restrict him from pursuing behavior that solely depends on self-interest to ensure the accomplishment of total human welfare and a lifestyle built upon cooperation. He emphasized the importance of human, economic and moral experience to be able to utilize the existing resources (bounties of Allah) that are not scarce, but they need to be transformed to a ready-to-use form.

M. Akram Khan discussed that the objective of Islamic economics activity is Al-Falah not the maximum satisfaction of wants. For him, Islamic rational acts are necessarily the ones resulting in a positive outcome in the hereafter after the calculus of its costs and benefits (e.g. that includes resource utilization), which might be considered as irrational applying the conventional framework. He further discussed that acquisitiveness, selfishness, greed are not inherent in a man but it represents a deteriorated form of his humanity due to materialistic world's excessive fondness, and these qualities can be overcome by faith in God, the hereafter and by one's good deeds. Further, he stated that self-interest is a reality, however, sometimes humans have altruistic-driven actions that Western economic analysis does not analyze. (M. A. Khan, 1984).

Aqil (1989) declares that the behavior of an Islamic rational man will emerge if he follows the economic principles determined by the creator alone. Thus, he would have the ability to make rational decisions that are qualitative and consistent with the sense of accountability that is sourced from the fear of Allah SWT towards one's self and his social society. He stated that rationality is a goal by itself that humans need to aim at.

Asad Zaman emphasized the defects in the conventional rationality assumption where the spiritual and moral aspects of humans are neglected as if they are mammals, leaving people with a value judgment of them being "selfish" without criticism as if it is acceptable behavior. So, a spiritual human, not a materialistic one, should behave according to his Islamic morals and values on which his consumption (permissible, not extravagant, Partially spend on charity) or production (charitable and socially responsible, good ethics is good business) decisions will be made. He agreed that the selfish and greedy desires of humans can be overcome by inviting people to the good (Al-Amr Bil-Ma'ruf), Proposing an atmosphere of cooperation rather than the competition where humans as the "Best Creation" are being developed morally and spiritually, thus economic development shall follow. (Zaman, 2012)

M. Fahim Khan presented the concept of "Ar-Rushd" as opposed to the Rationality concept in conventional economics while discussing consumer behavior according to Islam. His framework assumes that a man is a social animal who is equipped with the power of reason to determine his needs and how to fulfill them while putting aside some of his desires facing the scarcity of resources. That rational man's decisions are influenced by his objectives and

understanding of life and his domain including his family, society, religion, etc. (F. Khan, 2013)

Finally, Al-Jarhi (2021) suggested the concept of "Guided Satisficing" that include self-interest, altruism, society's welfare, environment, etc. instead of "Rationality", where an ordinary economic man or a "Homo-Ordanirus" would fulfill his satisfactory goals, following Shariah rules, where illegitimate decisions shall be terminated by himself or his society.

It's quite clear that all of the previous reviews about rationality for Islamic economists, even if it was named differently, have the same grounds of one's economic behavior that is coherent with his religious identity, morals, values, and God's commandments. A Homo-Islamicus who aims at pleasing the creator to win the hereafter and to live his worldly life in the best possible manner that was prescribed for him by the All-Kowledagble God as a vicegerent reformer.

2. Methodology

The defaulted classical and neoclassical rationality conception represented a fertile field for criticism since it does not consider society's morals, values, and beliefs in interpreting the motives of human behavior. Moreover, it does not introduce a solution for handling immoral practices of those economic agents who only act to fulfill their self-interest. Accordingly, the paper follows the qualitative method to reach a clear concept for rationalism and an Economic man's rational behavior from an Islamic perspective where it attempts to introduce a simple satisfaction (wellbeing) or utility function for an Islamic rationalist. To do that, the paper depends on readings from the glorious Qur'an, Hadith and previous scholars' views, and some relatively modern studies. Secondly, the paper aims at introducing empirical results concerning testing the validity of the "rational choice theory" of the neoclassical theory by conducting a descriptive statistical analysis for the results of the aforementioned conducted survey in Turkey that aims at exploring how people living in Turkey make their purchasing decisions as consumers.

3. Islamic Rationalist Well-being (Utility) Function

In the light of the aforementioned, the concept of rationality, upon which the following proposed function relies on, starts with the following assumptions. firstly, the objective of an Islamic rationalist is to maximize his overall wellbeing in worldly life and the hereafter. Wellbeing, as per the aforesaid, from an Islamic perspective, as will be explained shortly, is a reflection of satisfaction, or utility, or interests, or Al- Falah (ultimate success). Secondly, it is based on the values and commandments of the religion of Islam. Thirdly, the function's purpose is not to introduce a sophisticated mathematical imitation or an equivalent simulation to the utility maximization function of mainstream economics. However, it is an approximation of views or an ultimate simple visualization that the proposed human rational behavior can be expressed with. The reason for that belief is that the exaggeration in using mathematics to describe and analyze human behavior is a misuse of mathematical laws and

lead to more vague complication. Thirdly, using the term "Well-being" in the proposed function reflects the satisfaction that a rational human can reach by maximizing the sum of utilities from its component variables. Lastly, we need to mention that wellbeing or utility can not be measured in units, but it can be reflected in the convergence of economic rational agents to the proposed optimal status. To construct that function upon the previous assumptions, firstly, a clarification of the pillars of Islamic rationalism has to be explained. Secondly, a new definition for our wellbeing or utility or satisfaction, that will be maximized, has to be set from an Islamic perspective.

Regardless of the debate about whether Islamic economics depends on normative or positive economics since the main sources of Shariah and consequently Islamic economics, Qu'ran, and sunnah, has both normative and positive statements (Mannan, 1983), Islamic rationalism adopts the religious and social values of Islam to be the main organizer of human behavior. In Islamic rationalism, wellbeing (smaller units of utility) maximization contributes to higher overall satisfaction for a human, however, it is considered as a means to a higher objective, which is Allah's satisfaction, to whom belong the ownership of all resources and individuals are entrusted on them. Additionally, in Islamic rationalism, humans do not deny their self-interest, they are maximizing their material utility, but they take into consideration another dimension of the utility, an immaterial aspect that considers the orders of god, the moral values of Islam, and society's interests.

So it's concluded that:

$$WB\ (Ri) = U\ (U_{Self}, U_{Others}) \tag{1}$$

where an Islamic rationalist (Ri) will have his Well-being (WB) maximized if his self-based utility (U_{self}) and others' utility (U_{Others}), that can be society members, one's family, relatives, or friends, is maximized. As for others' utility (U_{Others}), as Islam has asserted one's freedom and interest, it emphasized also the social interests of others. Along with the application of the religious previous statement, it's important to refer to the fact that increasing other's utility shall be reflected in one's utility too materially and psychologically (immaterially). An example of the material aspect can be represented in the Zakah. The Zakah mechanism starts with one directing a portion of his wealth to those in need that reach them in form of cash or by providing them with a machine pursuing a craft or starting a small business to attain self-sufficiency. Those people will maintain Halal earning and create a new purchasing power that will enable them to buy goods and services from the market, increasing their material well-being or utility, and ultimately creating their wealth in the long run as a result of their effort. Thus, their consumption will take the form of profits to traders and wages to workers. To sum up, the zakah payer's consumption of money or wealth led to an increase in society's utility including himself from the material side, and another elevation in spiritual satisfaction in this world and the hereafter. One's spending on his family has a psychological reflection of satisfaction and happiness to be able to support the loved ones. A trader who offers moderate prices will attract more clients from different income levels, which will increase his obtained

returns as well. So, the social total well-being is definitely related to the well-being of an individual.

As for the self-based utility (U_{Self}):

$$(U_{Self}) \text{ of } (Ri) = U(U_{Material}, U_{Spiritual}) \tag{2}$$

The material utility ($U_{Material}$) is bound to the constraint set ($T_{UMaterial}$), represented as follows :

$$(T_{UMaterial}) = (T_{Intention}, T_{Income}, T_{Extravagance}, T_{Halal,Moral}, T_{Society's\ interests}) \tag{3}$$

An Islamic rationalist (Ri) will have his Well-being maximized by increasing his material utility ($U_{Material}$) and his Immaterial or spiritual utility ($U_{Spiritual}$). Firstly, material utility maximization can be represented in an individual's consumption that fulfills material needs and wants, or by maximizing his earning activity (being a producer, an employee, an entrepreneur). Coming to consumption, (Khan, 2013) discussed that from an Islamic perspective and as present in reality, consumption (or utility) is fueled by people's needs, not their wants. However, defining a "need" might differ from one person to another, and from one society to another. So, the aforementioned broader concept can be used instead, and it is "Al-Maslaha", which was referred to as Al-Ghazali and Al-Shatibi (see section 2.3). They both have emphasized that whatever contributes to the protection of the five main aspects of Maqasid Al-Shariah is considered a "Maslaha" (Al-Ghazali, 2008; Al Shatibi, 1997), regardless of the need's position in the hierarchy of Ad-Daruriyyat (Necessities) - Al-Hajiyyat (Needs) - At-Tahsiniyyat (Luxuries or Complementaie), considering that what harms attaining Maslaha is an evil (Mafsadah), which in this paper's context can be considered irrational. For maximizing one's earnings which is a broader concept than profit since it includes wages and salaries, Islam affirmed the permissibility of earning to cover the spending included in covering the achievement of " Al-Masalah" that has been mentioned. Attaining higher profits or earnings whether to cover only one's necessities, needs, or luxuries, in fact, is encouraged as long as it is compatible with the ethical framework of Islamic teachings. However, as Al-Shaybani (1997) explained, the extension in acquiring more earnings or profits has to be accompanied by the utilization of it to support the well-being and prosperity of the society.

Additionally, Rationality in Islam is built on human intellect to take proper economic decisions. In other words, unlike secular rationalism, Intellect only – not rationality - enables individuals to discover, read and interpret their surroundings and natural resources not only from their material existence to handle their worldly affairs but also helps individuals to vision them as signs to the superior existence of our god, helping them to maintain a holistic vision of this world, maintaining their commitment to faith and creativity. (Hasan, 2016). It's worth mentioning that Imam Izz Ibn Abdus-Salam, the famous Muslim scholar and judge, referred to the principle of rationality (classifying Utility as Maslaha according to the previously illustrated), stating that Allah SWT has created human beings to recognize the worldly interests to acquire it and the evils to avoid it, then he stated that most of these interests and evils are already recognized by one's intellect. So, an intellectual rational person

will acquire his interest at different levels according to their preferences and abilities, some would acquire the highest, others would acquire the sufficient or the medium. (Al-Izz Ibn Abdus-Salam, 1994). All things considered, Islam supports people to fulfill their needs and desires as consuming goods and services, achieving career success, forming a family, traveling, having a fine education, seeking more earnings through economic activity…etc, thus his overall material utility and wellbeing shall be maximized, given that all these needs and desires are attained according to the Islamic standards.

However, in Islamic rationalism and according to the principles of Islam, the aforementioned well-being or utility maximization is constrained by a constraint set ($T_{UMaterial}$) as follows:

($T_{Intention}$) = Individuals pursue their well-being maximization behavior through consumption or production to please Allah (the All Giving) while admitting their gratitude, intending to adopting it as Ibadah (an act of worship). Since deeds in Islam are related to intentions, seeking Allah's satisfaction.

(T_{Income}) = Humans should maintain an earning since they are morally responsible for covering their own needs and they are expected to work using their god-granted skills and talents to perform their work skillfully in the best forms, abstaining from begging and laziness. As well, indebtedness is discouraged in Islam except for necessary situations, thus people's spending decisions will be made according to their budgets that they are restricted to.

($T_{Extravagance,\ Miserliness}$) = Moderate spending and consumption, that is neither with extreme extravagance (Israf) and indulgence in worldly life nor with niggardliness, seeking a balance between them. Moreover, the extravagance in the utilization of public and natural resources (whether for a consumer or a producer) is prohibited, as Islam enhances the wise beneficial usage of our God-gifted resources, working on its development to ensure the inclusion of next generations in the calculations of its present time usage. Excessive pricing, to collect high profits, which leads to obstructing the accessibility of individuals to goods and services, especially the necessary ones, is prohibited. However, as mentioned earlier, a trader or a producer should offer moderate prices as an act of beneficence (Ihsan) to consumers which eventually shall be reflected in increasing his clients, thus his profit. Additionally, hoarding represents an extreme attribute that is prohibited in Islam, whether involves extravagant withholding of wealth or spending on commodities from a consumer's side or hoarding goods to resell them at a higher price from a producer's side.

($T_{Halal,\ Moral}$) = Individual's (as a producer or a consumer) earning or spending must be Halal, away from unlawful products or activities that are prohibited in Islam. Moreover, it should be useful for themselves and society. For example, products as alcohol, drugs, and specific kinds of food; and activities as gambling and speculation are prohibited in Islam. The prohibition as well is reflected on preventing their bad physical and moral effects on one's and society's well-being. For a producer, although Islam concretely allows profit attainment, it should not include exploitation of clients due to imperfect information about the price or quality of the product, nor workers due to their need of earning without them fair wages.

Another moral means that can discourage exploitation is the formation of voluntary efforts that involve giving interest-free loans, charity to the people in need, raising funds to improve community facilities..etc that benefit society as a whole.

$(T_{Society's\ interests})$ = Preserving the rights of other members of the society "Huquq Al-I'bad". Individuals ethically and morally are obliged to behave in a way that does not involve harmful effects on others in the society, hence reduce social welfare as a whole. Additionally, unlimited freedom which creates morally distorted societies should be restricted to the religious and moral limitations supported by suitable governmental policies. For example, harmful gas emissions from faulty cars or pursuing production (e.g. factories) increase air pollution that threatens the lives of all living creatures not just humans. Drug addiction, besides being harmful to humans themselves, probably leads to detrimental results that affect the addict and the whole society as the increase in crime rates and immoral practices.

Secondly, coming to the immaterial or spiritual utility for an Islamic rationalist ($U_{Spiritual}$) :

$$(U_{Spiritual})\ of\ (Ri) = U\ (\ U_{Prayer}\ ,\ U_{Fasting}\ ,\ U_{Alms,\ Charity},\ U_{Haj},\ \ldots U_{Religious\ Worship}) \tag{4}$$

for a Muslim to maintain higher spiritual utility, Humans have to maintain a solid belief that is maintained by following the commands of Allah SWT concerning obligatory acts of worship as the five daily prayers, fasting Ramadan, Giving Zakah (Alms), performing Hajj once. As well, voluntary acts of worship as a voluntary charity (Sadaqah), Reading the Qur'an, seeking knowledge, asking about neighbors, and all others means of worship will provide an additional increase in people's spiritual satisfaction, knowing that they are pleasing God. The above-mentioned commands do not separate human life into two sections, rather it aids them to live the worldly life with Allah's obedience, and in the best manner of sensitivity and gratitude towards Allah SWT as the lord of this world and towards others as partners of life.

Therefore, Considering prior mentioned illustration, it's concluded that an Islamic rationalist is not only a utility maximizer but also a morality maximizer who enjoys adequate freedom and time to pursue efforts and work required for covering necessities by Halal earning and investing leisure in enhancing one's spirituality, which will reflect in higher overall welfare and morality of himself and the society as well.

4. Data

The paper attempted to utilize the quantitative approach based on primary data for 363 participants (nationals and foreigners) residing in Turkey who are at least at the age of 18 years old. Data were collected during the period from the 10th of January 2021 to the 16th of January 2021, by a structured web-based questionnaire that was developed using online Google forms. The questionnaire was shared with different volunteered respondents through social media means due to social distancing considerations; it was conducted in English and Turkish and was divided into two sections. The first section includes questions about participants' demographic and socio-economic backgrounds, represented in gender, age, nationality, education, occupation, and monthly income. The second section included

questions about participants' views concerning their decision-making motives and influences through summative five-points scales and multiple-choice questions. (See appendix A).

5. Results

Table 1. illustrates the demographic characteristics of the entire sample. Firstly, Among the total of 363 participants residing in Turkey, approximately 60% of participants were females and 40% were males. The majority of participants' age ranged between 18 and 35. Our sample is mixed with about 56% of Turkish citizens and 44% of foreigners residing in Turkey. About 88.5% of participants are at least holders of a four-year university degree, which indicates the sample being highly educated. Students represent around 46% of the sample, where, employed participants represent about 35.5%, and unemployed or retired form approximately 18.5% of the sample. Participants were asked to specify their monthly income by choosing from income slots, and accordingly, about 52% of participants' incomes range between zero to 2000 Turkish Liras, and the rest of the sample's incomes were more than 2000 Turkish Liras. A limited budget is expected to play a significant role in determining the purchasing decisions of the sample's majority of students, unemployed or retired.

Table 1. Demographics of participants in proportions.

Characteristic	Proportion(%)	Std. Err.	Std. Dev.
Gender			0.49
Male	40.22	0.03	
Female	59.78	0.03	
Age			1.06
18 – 25	41.60	0.03	
26 – 35	35.54	0.03	
36 - 45	10.74	0.02	
46 – 55	9.64	0.02	
56+	2.48	0.01	
Marital Status			0.48
Single	68.32	0.02	
Married	31.13	0.02	
Other(Divorced, Widow)	0.55	0.003	
Nationality			0.50
Turkish	55.92	0.03	
Foreigner	44.08	0.03	
Education			0.66
Primary School	1.38	0.01	
High School	9.92	0.02	
University Degree	57.02	0.03	
Master's or Ph.D.	31.68	0.02	
Occupation			0.98
Employed	35.54	0.03	
Unemployed	14..05	0.02	
Student	46.01	0.03	
Retired	4.41	0.01	
Monthly Income (T.L.)			1.99
0 – 1999	52.26	0.03	
2000 - 2999	8.47	0.01	
3000 - 3999	9.04	0.02	
4000 – 4999	5.65	0.01	
5000 - 5999	6.78	0.01	
6000+	17.80	0..02	
Entire Sample = 363			

*Stata Program was utilized to analyze and process data.

After analyzing data, considerable results are observed in terms of the aims of this study. Firstly, the answers participants concerning the way they decide to purchase, around only 37% of participants stated that they purchase out of need, however, the rest of participants decide to purchase either due to offers and discounts, imitate others, follow current trends, products' good reviews or for having no reason to buy. Moreover, about 54.5% selected multiple answers. So, it appears that a considerable percentage of 64% have differentiated purchasing motives that might not be logical to common classical and neoclassical standards. When participants were asked whether they consider themselves rational (logical) while purchase, about 71% of participants considered themselves rational or logical when

purchasing where 32.5% of them have incomes between 0-1999 Turkish Liras. About 22% of participants do not recognize themselves as rational or irrational, and 6% referred to themselves as irrational.

The answers to this question are considered vital in the interpretation of questions to come since people's considerations about rationality sometimes differ from those in the rational choice theory as shall be illustrated. Coming to other questions, It's noticed that 43.52% stated that they are affected by their families, friends, colleagues..etc when purchasing, Most of the 32% of participants who can not identify themselves as rational or irrational remain neutral or state that they are influenced by others. Participants were asked if advertisements influence their purchasing decisions, 32.5 % of them answered positively, while around 39% answered negatively and 29% remained neutral. Additionally, about 49.5% of participants declared that their mood swings affect their purchasing decisions, while about 24% stated otherwise and 26.5% have neutral views.

Coming to participant's social adaptation, the majority stated that they do not purchase to adapt to their social environment, and about 16% answered neutrally, and about 12% answered positively. Attempting to know whether participants have addictive tendencies, they were asked if they shall continue purchasing and consuming what they know that is harmful to their health, and around 61% stated that they would or may do. Finally, relying on other studies claims that businesses target people because of their imperfect information and irrationality in purchasing brand products, participants were asked if they think that the quality of a product is related to how expensive it is, about 70% gave a positive or neutral answer.

From available data and in light of answers to other questions of the survey, we reached some important findings for those who considered themselves rational, explained as follows:

1- About 43% of them do state that they are influenced by others.
2- About 30% state that they are influenced by advertisements.
3- About 50% state that they are influenced by their moods.
4- About 9% state that they are purchase to adapt to their social environment.
5- Coming to purchasing decisions, 8% state that they purchase when they feel like shopping, 29.5% adopt a searching behavior for the best product, and around 62.5% state that they pursue both ways.
6- About 37% purchase because of their feeling towards others.
7- About 63% do or may purchase and consume products despite their knowledge of it being harmful to them.
8- About 76% think that an expensive product is with quality.

It's important to take into consideration that the remaining percentage of participants for each question does include participants who have neutral views about all questions, so their

Table 2. : Descriptive Statistics (Participants' views)

Variables (Participants' views)	Percentage (%) n=363	Mean	Std. Dev.
Purchasing decision		4.01	1.15
feel like buying without any reason	2.75		
discount or promotion	4.13		
when in need of something	36.91		
want to have what others have/follow trends/reviews	1.65		
Obs. with Multiple answers	54.55		
		3.86	0.91
Thought of being rational (logical) when purchasing			
Not Rational at all	1.93		
2	5.23		
3	22.04		
4	46.83		
I am always rational	23.97		
		3.25	1.10
Influenced by family, friends, colleagues, etc.			
Strongly not affected	6.61		
2	18.18		
3	31.68		
4	30.30		
Strongly affected	13.22		
		2.89	1.21
Influenced by advertisements			
Strongly not affected	15.15		
2	23.69		
3	28.93		
4	21.76		
Strongly affected	10.47		
		3.39	1.34
Influenced by mood			
Strongly not affected	13.50		
2	10.744		
3	26.17		
4	22.59		
Strongly affected	27		
		1.98	1.15
Purchase to adapt to the social environment			
I will never buy	46.01		
2	26.17		
3	15.70		
4	7.99		
Will definitely buy	4.13		
		2.51	0.69
Purchasing decision time			
What is liked during a shopping	11.57		
Search, learn features, buy	26.17		
Sometimes (search/ immediate)	62.26		
		2.08	0.79
The purchasing decision is affected by people			
Yes	27		
Neutral	37.74		
No	35.26		
		2.04	0.86
Continue to consume harmful/loved			
Yes	35.26		
Neutral	25.90		
No	38.84		
		1.96	0.80
Expensive product have quality			
Yes	34.16		
Neutral	35.54		
No	30.30		

*Stata software was utilized to analyze and process data.

answers can bear a yes or a no, causing some results about these people's real behavior to be unknown. Therefore, from previous findings, a pattern of irrational decisions can be observed for those who consider themselves rational (logical), which is opposite to the assumption that individuals have a complete awareness of their preferences, making purchasing decisions according to what satisfies them only, and the information they have about what to be purchased is correct and complete, that belongs to the classical and neoclassical rational choice theory that in this case can be nullified. Additionally, it's concluded that instead of being of a highly calculative nature, people tend to adopt a searching behavior in their society to make a purchasing decision. Clear is to notice that several factors that were ignored in the rational choice theory do affect people in this regard such as advertisements, changing preferences, social surroundings..etc. As well, it's found that people's status as rational or irrational changes from time to time according to their moods or feelings. That can be supported by several empirical studies. For example (De Martino et al., 2006) pointed at the change that occurs in the functionality of the human brain due to differentiated emotions during the process of rational decision-making.

Conclusions

If rationality economically is a quality or a state that is contingent on logic, reason thinking, and decision making that belongs to a highly calculative character to solely maximize a utility or a profit, then such economic rationality is not only unrealistic, but also it squashes the moral, values, and social norms considerations of any society. The misleading justification for such an assumption thought out the history of economic theory is the lack of a good theory of mistakes with which an irrational action can be predicted. (Friedman, 2005). Besides, the analysis of human behavior is quite complex due to its correlation with several known and unknown factors that might be social, psychological, cultural, religious, emotional, or others that ultimately affect economic processes. That can justify the shift that occurred in the analysis of human behavior supported by evolutionary psychologists, behavioral economics, and sociologists. For that reason, the rationality assumption in classical and neoclassical economics fails in being a basis for economic human behavior analysis.

In this highlighted context, the empirical evidence revealed in this paper also proved that advertising, social environment, addictive tendencies, and mood swings did affect people's purchasing decisions, even when they considered the majority of participants recognized themselves as rational. It proved also that they are pursuing a searching or instant buying behavior when deciding what to purchase.

In the light of our preceding proposed Islamic rationalism concept, rational economic agents are not rigorous calculative robotic humans who pursue their self-interest. Although Islam identifies humans as the "best creation" with extraordinary intellect abilities, their rational behavior is bound by the "human" mind that is not highly calculative, and the Islamic religious values and morals that provide a guideline setting that polish an Islamic rationalist's

decisions with the ultimate objective of attaining success is the worldly life and the hereafter. Additionally, rationality is an aimed status that we as human beings need to work on. Thus, people's rational behavior can be assessed by evaluating people's behavior and its convergence to their well-being (utility) maximization as embodied in the proposed function, ensuring their material and spiritual satisfaction.

In this context, Islamic economists are responsible for emphasizing the rational actor as the unit of analysis in Islamic economics taking into consideration that such an analysis would be based on Islamic values that can not be purely positive. As well, the utilization of complex mathematics to express humans' satisfaction or utility is neither possible nor real. So, no imitation of conventional methods is required since their assumptions inherently differ from the assumption of an Islamic economic system.

Moreover, as Al-Shaybani recommends one's maintenance of learning about own earning, it's crucial that Islamic economists would introduce Shariah complaint policy measures to assess the society members' convergence to the optimal Islamic rational behavior. With the help of sociologists and psychologists, audible and visual awareness-raising programs can be developed to reach the majority of the public, aiming at simplifying the steps with which individuals can attain the fruits of being rational in the scope of Islam.

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Appendix A: Survey Questions:

Birinci Bölüm: Demografik Bilgiler (Section 1: Demographic Information):

1- Cinsiyetiniz (Gender) *

     Erkek (Male)

     Kadın (Female)

2- Yaşınız (Age) *

     18 - 25

     26 - 35

     36 - 45

     46 - 55

     56 +

3- Medeni Haliniz (Marital Status) *

     Bekar (Single)

     Evli (Married)

     Other

4- Eğitim Durumunuz (Level of Education) *

     İlkokul (Primary school)

     Lise (High school)

     Üniversite (Bachelor's Degree)

     Yüksek Lisans/Doktora (Master's Degree/Doctorate Ph.D.)

5- Meslek Durumunuz (Occupation)

     Çalışıyorum (I am working)

     Çalışmıyorum (I am not working)

     Öğrenciyim (I am a student)

     Emekliyim (I am retired)

6- Aylık Geliriniz (Monthly Income) *

     0 - 1999 TL

2000 - 2999 TL

3000 - 3999 TL

4000 - 4999 TL

5000 - 5999 TL

6000+

7- Uyruğunuz (Nationality) *?

8- Türkiye'nin neresinde yaşıyorsunuz? (In which district are you living in Turkey?) *

İkinci Bölüm: Tüketicilerin Satın Alma Kararı (Section 2: Consumer Buying Decision):

1- Lütfen aşağıda yer alan seçeneklerden size en uygun olanını işaretleyiniz. (Please tick relevant boxes for your answers)

-Bir ürünü almaya nasıl karar verirsiniz? Birden fazla seçeneği işaretleyebilirsiniz. (How do you decide to buy something? You can choose more than one answer.) *

Hiçbir neden olmadan satın alırım. (I buy when I feel like buying without any reason.)

İndirim veya kampanya varsa satın alırım. (I buy when there is a discount or promotion.)

Sadece ihtiyacım varsa satın alırım. (I buy only when in need of something.)

Başkalarında gördüğüm için satın alırım. (I buy because I want to have what others have.)

En son moda/trendi takip etmek istediğim için satın alırım. (I buy because I want to follow latest trend.)

İyi yorumlar/değerlendirmeler olduğu için satın alırım. (I buy something because it has good reviews.)

2- Bir ürünü satın alma kararı verirken ne kadar mantıklı davrandığınızı düşünüyorsunuz? (Do you think you are rational (logical) when you decide to buy something?) *

Hiç mantıklı davranmıyorum (I am not rational at all)

2

3

4

Her zaman en mantıklı kararı veriyorum (I am always rational)

3- Bir şey satın alırken aileniz, arkadaşlarınız, meslektaşlarınız vb. sizi etkiler mi? (Does your family, friends, colleagues, etc. influence you to buy something?) *

Hiç etkilemez (Strongly not affected)

2

3

4

Kesinlikle çok etkiler (Strongly affected)

4- Reklam ve ilanlar satın alma kararınızı etkiler mi? (Does the advertisement influence you to buy something?) *

Hiç etkilemez (Strongly not affected)

2

3

4

Kesinlikle çok etkiler (Strongly affected)

5- Alışveriş sırasındaki ruh haliniz satın alacağınız ürün miktarını etkiler mi? (Does your mood during shopping affect the number of products you buy?) *

Hiç etkilemez (Strongly not affected)

2

3

4

Kesinlikle çok etkiler (Strongly affected)

6- Bir ürüne ihtiyacım olmasa bile sosyal çevreme uyum sağlamak için o ürünü satın aldığım olur. (Even if I don't need a product, I sometimes might buy that product to adapt to my social environment.) *

Asla almam (I will never buy)

2

3

4

Kesinlikle alırım (I will definitely buy)

7- Bir ürünü satın alırken; (When purchasing a product;) *

Genellikle alışveriş sırasında karar verir, hoşuma giden ürünü alırım. (Usually I decide during shopping and buy the product I like.)

Önceden araştırır, teknik özellik ve fiyat bilgisine sahip olarak giderim. (I search the product beforehand, learn the technical features and price information and then go shopping.)

Bazen araştırır, bazen alışveriş sırasında karar veririm. (Sometimes I search beforehand, sometimes I choose my decision while shopping.

8- Bir ürüne ilişkin tavsiyede bulunan kişinin, sevdiğiniz bir kişi ya da hiç hoşlanmadığınız bir kişi oluşu, satın alma kararınızı etkiler mi? (If the person making a recommendation for a product is someone you love or someone you don't like at all, does this affect your decision to buy?) *

Evet (Yes)

Kararsızım (Neutral)

Hayır (No)

9- Bir ürünü (örneğin çikolata veya sigara) tüketmeyi seviyor ancak sağlığınız için iyi olmadığını biliyorsanız, satın almaya ve tüketmeye devam eder misiniz? (If you love to consume a product (ex. chocolate or cigarettes) but you know it's not good for your health, would you continue to purchase and consume it?) *

Evet (Yes)

Kararsızım (Neutral)

Hayır (No)

10- Pahalı ürün kaliteli üründür. (Expensive product have quality) *

Evet (Yes)

Kararsızım (Neutral)

Hayır (No)

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An Empirical Analysis of Inflation Targeting in Dual Banking System: Case Study of Turkey

Tawfik Azrak[1], Fatma Sayar[2]

Abstract

Inflation has many important macroeconomic issues in many countries like Turkey. The uncertainty resulting from high inflation is one of the negativities that closely affect the financial sector. The purpose of this paper is to explore the feasibility of inflation targeting monetary policy in the dual banking system. The study investigates the long-run relationship between inflation rate, interest rate, real effective exchange rate, narrow money, and profit rate. The data collected were monthly and the period is from 2007 to 2017. The result of the study showed that interest rate and narrow money have a positive correlation with the inflation rate. Inflation targeting may not be a proper monetary policy for the financial system of Turkey. Because of the high sensitivity, it is not always easy to achieve targeted inflation. Instead of inflation targeting, interest rate targeting may help monetary policies to exert more influence on the financial sector. Keeping the interest rate under control may be a more useful monetary policy. In this way, the effects of monetary policies will be reflected more directly in the financial sector. If the monetary policies implemented are become more effective for both types of finance, their contribution to the economy will be enhanced, and controlling the macroeconomic targets will be more easily fulfilled. Thus, controlling the interest rate will give the authorities more control over Islamic finance in the sector.

Keywords: Dual banking, Islamic finance, Inflation, Interest rate, Inflation targeting

JEL Codes: G2, G24

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Introduction

A measure of the average prices of goods and services in the economy is called price level. Inflation can be described as the percentage increase in the price level from one year to the other, when the price level rises in an economy, the average price of all goods and services sold is increasing. Inflation is calculated as the percentage increase in a country's price level over some period, usually a year. In other words, inflation is argued to be a decline in the values of money over a period and it is one of the important monetary indicators of the economic system. All countries aim to achieve economic growth and fight with inflation and financial imbalances. Inflation does not only show its effect on the economy but also consumer spending, the investment sector, and the labor market.

High inflation is not desirable because it leads an economy to allocate resources inefficiently and increases uncertainty. There is a negative relationship between output level and high inflation, for example the paper of Chandrashekar, Sampath, and Vadivel (2019) study the relationship between inflation and stock returns in India and the results prove that a significant negative relationship between inflation and output. High inflation does not only affect negatively output level but also the growth rate of potential output so it will add pressure on the production. Unemployment is also linked to inflation. In some countries, any attempt to reduce inflation results in an increase in inflation or vice versa.

Inflation targets may vary from country to country, but generally low level and stable inflation is the main goal of most of the central banks. High inflation costs in the economy can show themselves in many various ways. Unstable prices are influential in the behavior of producers and consumers and lead to serious fluctuations in production and consumption occur. The expectations of society are also get affected by inflation. Uncertainty, which is a result of high inflation, negatively affects investment activities, borrowing costs, and economic plans based on estimated prices (Terzioğlu, 2017).

Monetary policy has emerged as one of the most important responsibilities of the governments, who should try all the time to keep stable monetary policy in the country. One element of these responsibilities is to keep low and stable levels of inflation which consider a core element in the monetary policy.

On the other hand, implementing good and stable monetary policies is a big challenge for the central banks especially for the countries which have a dual financial system like Turkey. The challenge arises from the conflict of core principles of the conventional and Islamic financial system.

Islamic economy and finance are established on five important pillars as follows; prohibition of interest, prohibition of gambling and speculation and dealing with elements which contain uncertainty in contracts, prohibition of restricted assets and activities, implementing profit and

loss sharing method and obligation of using real assets in all transactions. A functional and effective Islamic financial system requires economic policies in which these important criteria are met. On the other hand, in conventional finance, the system is constructed on interest. There is the involvement of interest in fund collection and fund usage process. Money is used as a commercial product because it is bought and sold for a certain price. In other words, there is money trade in conventional banking. Because of these fundamental differences, in countries where the existence of Islamic banking, such as Turkey, implementing monetary policy and increasing the effectiveness of these policies on Islamic banking can be a problem for central banks. When the Islamic bank's response to interest rate change is slow, using interest as a monetary policy tool will not show the same effectiveness of the monetary policy on Islamic banks.

Concerning inflation, some governments try to implement a policy of inflation targeting to stabilize the inflation levels in the country. This inflation targeting can be defined as a framework for monetary policy characterized by the public announcement of official quantitative targets for the inflation rate over one or more time horizons, and by an explicit acknowledgment that low, stable inflation is monetary policy's primary long-run goal.

There are many studies had been conducted to examine inflation targeting, but only a few studies have been focused on the dual banking system and the case study of Turkey.

The main objective of this paper is to investigate whether inflation targeting can be a proper monetary policy in a dual banking system. The paper will focus on Turkey as a case study of the dual banking system.

With the assistant of the increasing number of central banks implementing inflation targeting since the 1990s, the purpose of this study is to contribute to the literature specifically adding Islamic channels to the structure of inflation targeting.

This paper tries to answer the following questions:

Does inflation targeting be a good monetary policy in a dual banking system (for example, the case of Turkey)?

What is the effect of implementing the inflation targeting on Islamic and conventional banks in Turkey? and did this effect differ between Islamic and conventional banks?

How do the participation banks support the goals of the central bank in order to control the Inflation rate?

This study is important because it addresses inflation targeting policy in terms of the dual banking system. As of March 2019, 53 banks operated in the banking system. The number of

deposit banks is 34, the number of development and investment banks is 13 and the number of participation banks[3] is 6 (The Banks Association of Turkey, 2019).

Islamic finance, as it is in many parts of the world shows growth in Turkey. In 1983, with the decision of the Council of Ministers numbered 3/7506, the establishment of special financial institutions was allowed (The Participation Banks Association of Turkey, 2019). After that, with the opening of Albaraka Türk in 1984, Islamic banking activities started. With Emlak Bank opened in 2019, there are six Islamic banks serving in the banking sector. As of 2019, the total assets of Islamic banks amounted to 284,459 million TL, accounting for 6.3% of the sector (The Participation Banks Association of Turkey, 2019).

It is important for the economy and financial system to see the impact of inflation on the Islamic financial system as the impact on the conventional system for the future. Accordingly, there are few studies examining the relationship between inflation and Islamic finance. Therefore, the significance of this study is to try to see the impact of inflation on conventional banking as well as on Islamic banking and investigate the impacts of inflation targeting both banking types.

This paper consists of six sections, in the beginning the paper started with the background and rationale of this study, section 1 gives information about the concept of inflation. Section 2 discusses the theoretical and empirical literature. Section 3 describes the data, variables, and methodology. Section 4 consists of the results and a discussion of the findings. Finally, the study was completed with section 5 which states the conclusion and policy implications.

1. The Concept of Inflation

Inflation is explained by economists in different ways. The reason for disagreement is the difference in the causes of inflation. As a result of assumptions such as flexible wage and price, full employment, and full competition, the classical school has reached the following conclusion regarding inflation; there will be no deflationary environment in the economy and since the only cause of inflation is money supply increases, there will be no inflationary environment as long as the state controls the money supply (Öztürk, 2009). This is because, in the face of money supply increases, the economy maintains its balance only by price adjustment, and the employment and production volume are not affected. While Friedman defined the concept of inflation as a more increase in the quantity of money than the supply of output, Keynes claimed that the increase in the value of aggregate demand more than the value of aggregate supply at the full employment level causes inflation (Totonchi, 2011).

In general, inflation refers to the continuous and overall increase in the prices of goods and services in an economy (Central Bank of Turkey, 2013). According to this definition, two important factors need to be considered in inflation. Firstly, the general level of prices should be

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[3] Participation banks it is known globally as Islamic banks, but it is known in this concept in Turkey.

increased not just the prices. Secondly, the increase in the general level of prices should be continuous (Eğilmez, 2012).

1.1. Inflation Targeting

Mishkin (2011), Allen & Rogoff (2011), and Visokavičienė (2010) demonstrated the importance of monetary policies on both local and global scales. Low and stable inflation is the ultimate goal of monetary policies prepared by the central banks (IMF, 2021). Inflation Targeting (IT) is a tool of monetary policy in which a central bank estimates and makes public a projected or target inflation rate and then attempts to direct actual inflation towards the target through its use of policy instruments. Inflation targeting policy is an important tool for market management, which enables the communication between actors in the state and economy. This policy, first implemented in New Zealand in 1990, started to implement by the central bank of many developed and developing countries.

According to Mishkin (2001) inflation targeting monetary policy requires five important elements:

Making the public announcement of targeted medium-term inflation values,

Making price stability a primary goal of monetary policy,

Formulating a strategy that includes many variables, not just monetary aggregates or exchange rates, when determining policy instruments,

Increasing transparency of the monetary policy strategy to communicate better with the public and the markets,

Increasing accountability of the central bank for reaching its inflation objectives.

In addition to the factors necessary for effective inflation targeting, Mishkin has also highlighted the weaknesses of this monetary policy. Unlike other exchange rates and monetary aggregates, inflation outcomes are obtained only after a substantial lag. Therefore, the inflation target cannot send urgent signals to the market about monetary policy. The difficulty of control of inflation may cause the targets not to be met, which may lead to the loss of credibility of the central bank. Also, dollarization can be a serious challenge for inflation targeting. Unavoidable exchange rate fluctuations create a massive deterioration of the balance sheets of firms, households, and banks (Mishkin, 2001).

1.2. Implementation of Inflation Targeting in Turkey

High inflation, which manifests itself after the second world war and became chronic with the oil crisis, has caused major changes in the economic policies of Turkey during the 1980s. Monetary targeting and exchange rate targeting policies implemented until 2001 failed (Durmus, 2018). The inability to sustain indebtedness, high interest rates, and ever-increasing foreign exchange prices

caused serious damage to the economy. The loss of confidence of individuals in the Turkish Lira has made the economy more sensitive and prone to crises.

According to the Central Bank of Turkey, inflation targeting was introduced to Turkish practice after the 2001 economic crisis (TCMB, 2021). After the failure of the exchange rate-based monetary policy, the central bank of Turkey switched to fully-fledged inflation targeting policy in 2002. There was a transition period to prepare a suitable environment that required necessary conditions for the implementation of inflation targeting policy. This transition period was between 2002 and 2005 and was called the implicit inflation regime. An important difference of this process is that it can be used in other targets at the same time while setting the inflation target for the upcoming period. During the implicit inflation targeting process, the CB has gained enough experience for explicit inflation targeting (Şahan, 2018).

Graph 1: Targeted and Actual Inflation Rate Between 2002 and 2018 in Turkey
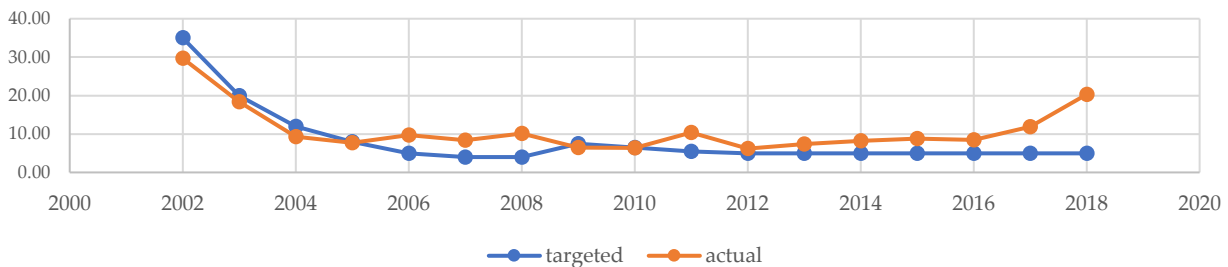
Source: Central Bank of Turkey

Graph number 1 showed the targeted and actual inflation rate of Turkey, between 2002 and 2018. The policy was successful from 2002 to 2005, and the actual inflation remained below the targeted level. The economy grew at an average annual rate of 7%, exchange rates, and interest rates became more stable and fluctuations in financial markets decreased (Şahan, 2018).

However, after that, in other years except for 2009 and 2010, the targeted value could not be achieved. Explicit inflation targeting, which has been implemented since 2006, coincided with a period in which the international economic conjuncture exhibited an unstable period. Therefore, the main reason for the failure to meet inflation targets can be shown as external shocks (Engin, 2011).

Turkey has a different financial system structure because of implementing conventional and Islamic banking systems at the same time. The implementation of monetary policy and the transmission mechanism of monetary policy can be a challenge for the central bank which is the highest authority in a country within such a system. Cevik and Charap (2011) found that there is a relationship between returns on one-year term deposits in conventional and retail Islamic banks in Malaysia and Turkey and this relationship exhibits a long-run equilibrium. They also reached that the rate of return of profit-loss sharing accounts of Islamic banks has an implicit relationship with conventional interest rates through debt-like instruments on the asset side. Thus, in general, in dual banking systems where conventional banking is dominant, Islamic banks must develop under the influence of interest rates.

1.3. Effects of Inflation on Islamic Finance

In the framework of honesty and justice sensitivity of Islam, price stability is important because inflation harms the welfare and economic situation of the society (Chapra, 1981). According to Islamic principles, the inflation rate should be zero because unlike the conventional financial system, instead of debt financing equity financing is encouraged and wasteful consumption is prohibited (Kia, 2014). However, whatever the causes of inflation, the negative effects on both conventional and Islamic financial systems are highly similar. High inflation leads to unemployment, decrease in purchasing power and investments. A decrease in investment creates more unemployment. Higher inflation results in lower capital circulation in the financial system and volume of business activities (Khan, 2011). According to the rules of the Islamic economy, uncertainty is strictly rejected, and therefore, Islamic banks act more cautiously when uncertainty occurs. Uncertainty arising from high inflation affects financial market actors negatively in both financial systems. In periods of high inflation, banks prefer to avoid risk and uncertainty, reduce trade volumes and work in safer areas. When there are multiple channels of monetary transmission, especially in the case of a dual banking system, it may be desirable to consider as many channels as possible to appraise the general stance of monetary policy, especially on the Islamic financial institutions. The central bank wants to control inflation in order to control interest rates because of the relationship between inflation and interest rates (Kılcı, 2019). Korkut & Özgür (2017) stated that Islamic banks' profit share rate gets affected markedly by the interest rate on government security and exchange rate. In their study, Ergenc & Arslan (2013) also concluded that Islamic banks were affected by the interest rate. Thus, the inflation rate also has a strong influence on Islamic banks indirectly. Mulkiaman (2016) emphasized that the objectives of monetary policy of conventional and Islamic systems are different from each other. While price stability, monetary stability, full employment, and optimum rate of economic growth are common targets in both monetary policy, Islamic monetary policy also targets the elimination of interest, uncertainty, gambling and speculation, socio-economic justice, and equitable distribution of income. Thus, their monetary policy instruments also are different from each other because of their philosophy.

In addition to the effects of inflation on Islamic finance, some other aspects affect the entire financial sector. The biggest effect of inflation is the uncertain environment in the economy. This uncertainty is also felt most in people's saving habits. Fewer savings triggers the lack of capital in the market. In other words, the transaction volume decreases and the possibility of fund collection decreases. Reporting and information transfer are important for the financial sector. The reports prepared with due consideration of transparency affect the credibility of financial institutions at home and abroad. The depreciation of money as a result of high inflation causes a decrease in the equity of financial institutions and reduces credibility (Gün, 2003).

2. Literature Review

As empirical literature, the results of the effect of inflation targeting in a country's macroeconomic performance are mixed.

The most recent study of inflation targeting in the dual banking system was done by Ndiaye & Masih (2017). They examined the appropriateness and consequently the feasibility of inflation targeting in an economy with a dual financial system in Malaysia, during the period from 2007 to 2017. The result of the study is that inflation targeting may not be ideal in a dual banking system in Malaysia. The Empirical study by Poon & Tong (2009) also has the same conclusion that inflation targeting may not fit in Malaysia because of its economic structure and institution.

On the other hand, the study of Andersena, Malchow-Moller & Nordvig (2015) was about OECD countries and they examined the efficiency of inflation targeting to the economic growth on countries that followed this particular monetary policy strategy during the crisis period 2007–13. The result of the study is that the countries with an IT monetary regime weathered the crisis much better than did countries with other monetary regimes, particularly countries with fixed exchange rates. Another study about OECD countries was done by Wu (2004). He analyzed the causal effect of a country's adoption of the IT monetary regime on that country's inflation rate decline between the years 1985-2002. The conclusion is that the countries that have officially adopted inflation targeting experienced a decrease in their average inflation rates after the adoption of the new regime. Another study about inflation targeting in Iran was done by Armesh, Slarzehi, Yaghoobi & Heydari (2010). They analyzed the effective factors on inflation in the Islamic Republic of Iran, from 1961 to 2005 and the summary of the study is that the central bank should, concerning intensive goals for inflation, reflects its efforts in achieving these goals in the regular and transparence explanation to the public. In the case of Bangladesh, Islam & Uddin (2011) stated that empirical findings jointly with few descriptive statistics provide strong evidence to recommend inflation targeting as the monetary policy strategy for Bangladesh.

There have been many studies examining the relationship between inflation and the financial sector. The empirical study of Huybens & Smith (1999) stated that higher inflation produces negative repercussions in the financial sector. The study also concluded that the lending volume and performances of banks decrease with the increasing inflation rate. Boyd, Levine & Smith (2001) found a nonlinear but strong negative relationship between inflation and both banking sector development and equity market activity.

Mahmood et al. (2019) investigated the impact of bank-specific factors and macro-specific factors on bank liquidity. The macro-specific factors were considered as GDP, inflation, monetary policy, and unemployment and the result states that inflation has an insignificant relationship with liquidity, so it does not influence the liquidity ratio of commercial banks. Bölükbaş (2019) examined the relationship between inflation, current account deficit, and banking sector credits and found a bidirectional causality relationship between inflation and banking sector credits. Also, the results showed that the effect of the banking sector on inflation is higher than the current account deficit. In their study, Umar & Maijama'a & Adamu (2014) researched conceptual exposition of the effect of inflation on bank performance. The study concludes that inflation influences banking sector performance adversely and has got a spillover effect that harms the overall economy. Ozturk & Karagoz (2012) examined the relationship between inflation and financial development in Turkey. In the study, the ratio of bank credits used by private firms to

GDP and broad money supply (M2) to GDP were used as banking sector development indicators. In the case of the ratio of the money supply to GDP, no long-run co-integrating relation was found between inflation and financial development. However, in the case of the ratio of credit to the private sector to GDP, there is a significant long-run relationship between inflation and financial depth. Thus, the study concluded that inflation affects financial development along with economic growth negatively.

As the effectiveness of inflation targeting in Turkey has been examined by many researchers. For example, Genc & Balcilar (2012) stated the inflation targeting policy is not effective and the observed levels of inflation would not have been any different from the forecasted ones if inflation targeting had not been adopted. While in other research Durmus (2018) also emphasized that the policy of implicit inflation targeting strategy was successful but the explicit inflation targeting strategy failed because of various problems.

3. Data and Methodology

The study investigates the long-run relationship between inflation rate, interest rate, real effective exchange rate, narrow money, and profit rate considering the major transmission mechanism channels in the conduct of monetary policy.

The model was constructed based on a published working paper by Ndiaye & Masih (2017), "Is inflation targeting the proper monetary policy regime in a dual banking system?".

The data of this study consist of secondary data. They are obtained from OECD Databank, International Financial Statistics IMF, Central Bank of Turkey, and Participation Banks Association of Turkey. The variables are expressed in logarithm 10 base and used in the analysis belongs to years 2007-2017 and are evaluated monthly. The data are analyzed using the econometrics software, namely SPSS.

Table 1: Symbols and Definitions of the Variables

Variable	Symbol	Definition
Inflation Rate	INF	Inflation measured by consumer price index (CPI) is defined as the change in the prices of a basket of goods and services that are typically purchased by specific groups of households
Interest Rate	INT	The central bank policy rate (CBPR) is the rate that is used by CB to implement or signal its monetary policy stance. It is most commonly set by the CB's policy making committee.
Exchange Rate	EXC	According to the definition used by IMF, the real effective exchange rate is computed as the weighted geometric average of the price of the domestic country relative to the prices of its trade partners.
Narrow Money	M	M1 includes currency i.e., banknotes and coins, plus overnight deposits.
Profit Rate	P	Rate of profit distributed by participation banks.

Table 2: Measurement, Sources and References of the Variables

Variable	Measurement	Source	Reference
Inflation rate	Total, Annual growth rate (%)	OECD (2019)	Wu (2004); AboZaid&Tuzemen (2009); Pong&Tong (2009); Tasar&Bayat (2015); Ndiaye&Masih (2017);
Interest rate	Percent per Annum	International Financial Statistics, IMF (2019)	Wu (2004); Ndiaye&Masih (2017);
Exchange rate	CPI Based Real Effective Exchange Rate 2003=100	Central Bank of Turkey (2019)	Pong&Tong (2009); Khatat, (2016); Ndiaye&Masih (2017);
Narrow money	Total, 2015=100	OECD (2019)	Pong&Tong (2009); Ndiaye&Masih (2017);
Profit rate	Percentage per month for Turkish Lira (TL)	The Participation Banks Association of Turkey (2019)	

Descriptive Statistics

Table 3: Descriptive Statistics of all Variables Used in the Study

Variables	N	Minimum	Maximum	Mean	Std. Deviation
INF	132	0,59988	1,11327	0,91273	0,10159049
INT	132	0,17609	1,24304	0,84336	0,25546581
EXC	132	1,93222	2,10626	2,03279	0,04045548
M	132	1,36725	2,18958	1,76096	0,24949297
P	132	0,77936	1,21405	0,95352	0,12935385

Table number 3 shows the minimum and maximum values of the variables with their mean, median, and standard deviations. These data are converted to the logarithm base 10 of the actual values. Thus, while the maximum value of the dependent variable which is the inflation rate is 1,11, the minimum value is 0,59. The Interest rate takes the highest value with 1,24 and the minimum value is 0,17.

The Exchange rate has the highest mean value in the variables with 2,03 but the lowest standard deviation is 0,04. The mean value of narrow money is 1,76, The standard deviation is 0,24. The mean values and the standard deviations of the inflation rate and interest rate are quite close to each other. As can be seen from the above table, the maximum values of interest and profit rate are remarkably close to each other.

The multiple linear regression equation is as follows:

$$INF_t = \beta_0 + \beta_1 INT_t + \beta_3 EXC_t + \beta_4 M_t + \beta_5 P_t + e_t$$

Where the inflation rate is the dependent variable, while interest rate, exchange rate, narrow money, and profit rate are the independent variables and (e_t) represents the error term.

4. Results and Discussion

The results obtained from the statistical program SPSS are presented below.

The correlation between the variables used in the study can be seen with the correlation matrix.

Table 4: Correlations Coefficients

Variables	INF	INT	EXC	M	P
INF	1				
(p-value)					
INT	0,471**	1			
(p-value)	0,000				
EXC	-0,185*	0,162	1		
(p-value)	0,034	0,064			
M	0,124	-0,348**	-0,853**	1	
(p-value)	0,155	0,000	0,000		
P	0,230**	0,760**	0,516**	-0,769**	1
(p-value)	0,008	0,000	0,000	0,000	

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

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

Table number 4 shows the correlations between the variables. The dependent variable of the linear equation has a positive correlation with the interest rate, narrow money, and profit rate.

However, it has a negative correlation only with the exchange rate. While the relation of inflation with interest rate and the profit rate is strong, its relations with the narrow money and exchange rate are not very strong relative to interest and profit rate.

The positive relationship between inflation and interest rate is contrary to expectations as there is a general tendency for interest rates and the rate of inflation to have an inverse relationship since when interest rates are low, the economy grows and inflation increases. In general, as interest rates are reduced, more people borrow more money. The result is that consumers have more money to spend. This causes the economy to grow and inflation to increase.

The correlation between interest rate and the profit rate is remarkable. It is positive and very strong. Another strong correlation is between exchange rate and narrow money but is a negative correlation.

Table 5: Model summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
0,573	0,328	0,307	0,08458543

In the model summary, the R square appeared as 0,328. This means that in our model, the independent variables which are interest rate, exchange rate, narrow money, and profit rate account for 0,328 of the variance independent variable which is the inflation rate. In other words, 0.328 of the changes in inflation can be explained by independent variables of the model.

Table 6: F-test, ANOVA Table

	Sum of Squares	df	Mean Square	F	Sig.
Regression	0,443	4	0,111	15,492	0,000
Residual	0,909	127	0,007		
Total	1,352	131			

As a result of the F-test, the F value is 15,492 and the p-value is 0,000 which means the overall regression model is significant at a significance level of 0.05. Thus, this result may reveal a linear relationship between the four independent variables and dependent variable in the model.

Table 7: Coefficients Table

variables	model 1	model 2	model 3	model 4
constant	0.755**	2.109**	0.478	-0.300
	(0.027)	(0.380)	(0.848)	(0.994)

INT	0.187**	0.205**	0.233**	0.167**
	(0.031)	(0.030)	(0.032)	(0.055)
EXC		-0.673*	0.002	0.205
		(0.189)	(0.366)	(0.389)
M			0.134*	0.238*
			(0.062)	(0.094)
P				0.249
				(0.167)
R2	0.222	0.292	0.316	0.328
F	37.045	26.567	19.735	15.492
n	132	132	132	132

Standard errors are presented below the corresponding coefficient.

*Symbols * and **mean significant at 0.05 and at 0.01 level.*

The result in table number 7 gives detailed information about the significance of coefficients. According to the results, while interest rate and narrow money are significant at 0.01 and 0.05 significance levels, the exchange rate and profit rate are not significant. One unit increase in the interest rate causes an increase of 0,167 on inflation holding the other variables constant, and as we explained previously, the positive relationship between inflation and interest rate is contrary to expectations since there is a general tendency for interest rates and the rate of inflation to have an inverse relationship, since when interest rates are low, the economy grows and inflation increases, In general, as interest rates are reduced, more people can borrow more money. The result is that consumers have more money to spend. This causes the economy to grow and inflation to increase.

In addition, another significant variable, one unit increase in narrow money increases the inflation rate by 0.238 holding the other variables constant. This result was expected as according to Vaish (2002), inflation is a sustained rise in the general price level brought about by a high rate of expansion in the aggregate money supply. With the increase in money supply, individuals will have more on their hands and they will demand more goods. This will lead to demand pull inflation.

Finally, the effects of exchange rate and profit rate on inflation rate are relatively higher but they are not significant.

Conclusion and Policy Implications

Inflation is a problem that causes uncertainty, prevents taking healthy economic decisions, hampers economic growth, disrupts income distribution, and causes economic destruction.

Interest rate and narrow money have a positive correlation with the inflation rate. Especially any change in interest rate may have a strong effect on inflation compared to other variables. This result meets with the study of Torun & Karanfil (2016). They examined the relationship between inflation and interest rates in Turkey's economy for the period 1980-2013 and found unidirectional causality from interest rate to inflation.

The regression results show that many variables influence inflation in Turkey. This makes inflation more sensitive. Therefore, it is not always easy to achieve targeted inflation. Failure to achieve the inflation target undermines confidence in the economy. The uncertainty in the market is a situation that both conventional finance and Islamic finance do not want.

With the start of the Islamic banks operating in Turkey, they were integrated into the monetary policy and the consequences of the conventional systems. These monetary policies are not prepared according to Islamic sensitivities. The followed policies are governed by the conventional monetary policy and managed by bankers with a conventional bank mentality in Turkey. In the end, as Asutay (2007) said Islamic banks fail to perform their social duties because of operating within the conventional system and being exposed to the same policies. Because of conventional finance's dominance and a very small share of Islamic finance in Turkey, Islamic finance becomes a follower in the sector. Thus, Islamic banks are under the influence of the conventional system. This can be seen as a problem that moves Islamic finance away from working principles.

Going to this reason, inflation targeting may not be a proper monetary policy for the financial system of Turkey. This result favors the results of the studies of Ndiaye & Masih (2017) and Pong & Tong (2009). Ndiaye & Masih (2017) also suggest that interest rate targeting may be the proper monetary policy target instead of inflation targeting. This suggestion is in line with the results of this study. Interest targeting helps monetary policies to exert more influence on Islamic banks. In response to this suggestion, it is possible to ask how favorable the interest targeting in Islamic finance is. The problem here is that conventional finance is the leader in the sector, and Islamic finance is in the position of a follower. Although interest is prohibited in Islam, due to globalization and regulation of the financial services in most of the economies in the world, interest rates became the prominent actor in the process of carrying out the monetary policy. Thus, increasing the share of Islamic finance in the sector will ensure that Islamic finance is taken into account in the formation of monetary policies. Köse and (2021).

In a conclusion, inflation is an economic indicator that is affected by many different variables and interest rate is one of the most important variables. Inflation targeting may not be the right monetary policy tool for Turkey and the dual banking system does not affect the effectiveness of monetary policies aimed at controlling inflation in Turkey. Instead of inflation targeting, keeping the interest rate under control will be a more useful monetary policy. In this way, the effects of monetary policies will be reflected more directly in the financial sector. If the monetary policies implemented are become more effective for both types of finance, their contribution to the economy will be enhanced, and controlling the macroeconomic targets will be more easily fulfilled. Thus, controlling the interest rate will give the authorities more control over Islamic finance in the sector. The dominance of Islamic finance sensitivities in monetary policies is only achieved through the increase in the market share of Islamic finance.

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Davranışsal Finansta Bilişsel Yansıma ve Karar Vermede Z Kuşağının Eğilimleri

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Özet

Geleneksel ekonomide insanların karar vermelerinde rasyonel tutumlarının belirleyici olduğu tezi kabul edilmekteydi. Ancak son yıllarda davranışsal finans kapsamında yapılan bilimsel çalışmalarda bu tezin aksine, insanların karar vermelerinde "çerçeveleme"nin belirgin bir etkisinin olduğu görülmüştür. Bilindiği üzere çerçeveleme; bir konuyu karşıdakine sunuş şekline bağlı olarak o kişinin kararında meydana gelen değişikliktir. Bunun yanı sıra verilen kararlarda kişinin düşünce şekli, Analitik veya Sezgisel, de önemli rol oynamaktadır. Zira Analitik düşünce yapısına sahip olan bireylerin Sezgisel düşünce yapısına sahip olan bireylere kıyasla çerçevelemelerin etkisinde daha az kaldıkları ve rasyonel karar almada daha başarılı oldukları gözlemlenmiştir.

Bu çalışmaya temel teşkil eden anket verileri Konya ilinde yaşayan, Z kuşağı mensubu (1997 yılından sonra dünyaya gelmiş olan) bireylerin verdikleri cevaplardan elde edilmiştir. Anketler; özel lise, devlet tabanlı Spor Lisesi ve Anadolu İmam Hatip Lisesi olmak üzere farklı okullarda öğrenim gören lise öğrencileri arasından rastgele örnekleme yoluyla seçilmiş yaklaşık 300 öğrenciye uygulanmış, öğrencilerin Sezgisel ya da Analitik düşünce yapısına sahip oldukları, Prof. Shane Frederick (2005) tarafından geliştirilen Bilişsel Yansıma Testi (Cognitive Reflection Test) kullanılarak belirlenmiş, ardından öğrencilerin düşünce yapılarına göre risk tercihlerinin değişip değişmeyeceğini ölçmek amaçlanmıştır. Bunların yanı sıra demografik değişkenlerin öğrencilerin karar vermeleri üzerinde etkili olup olmayacağı veya bu değişkenler ile kişilerin düşünce yapıları arasında bir ilişki kurulup kurulamayacağı incelenmiştir. Yapılan incelemeler neticesinde Z Kuşağından elde edilen bulgular daha önceki çalışmaların sonuçları ile örtüşmemiştir. Sezgisel ve Analitik düşünce yapısına sahip öğrenciler pozitif çerçevelenmiş sorularda beklenen yanıtları vermişlerse de negatif çerçevelenmiş sorulara gelindiğinde düşünce yapısı fark etmeksizin tercihlerini beklenenin tam aksi yönünde yapmışlardır.

Anahtar Kelimeler: Çerçeveleme, Z kuşağı, Bilişsel Yansıma Testi (CRT).

Jel Kodu: D01, D81, D91

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Cognitive Reflection in Behavioral Finance and Trends of Generation Z in Decision Making

Abstract

The traditional economy assumes that people's rational attitudes are determinant in their decision making. However, in recent years, scientific studies conducted within the scope of behavioral finance have shown that, contrary the assumption above, "framing" has a significant effect on people's decision making. Framing refers to the changes in the decision making process depending on the way of subject's presentation. In addition, the way of thinking of an individual, 'analytical' or 'intuitive', also plays an important role in the decision making process. It has been observed that individuals with analytical mindset are less influenced by framing and are more successful in making rational decisions compared to individuals with intuitive thinking.

The survey was conducted in Konya among members of the Generation Z (born post 1997). Nearly, 300 high school students selected by random sampling studying in various schools, including private high school, state-owned Sports High School and Anatolian Imam Hatip (Religious) High School. The Cognitive Reflection Test (CRT) developed by Shane Frederick (2005) was used to identify whether the students have analytical or intuitive thing, and then the study analyses whether the risk preferences of the students would change according to their way of thinking. In addition to these, it has been examined whether demographic variables can be related to students' decision making or whether a relationship can be established between these variables and people's mindsets. As a result of the analyses, the findings obtained from Generation Z did not coincide with the results of previous studies. Although the students with the intuitive and analytical mindset gave the expected answers in the positively framed questions, they made their choices in the opposite direction of what was expected when it came to the negatively framed questions, regardless of their mindset.

Keywords: Framing, Analytical thinking mode, Intuitive thinking mode, Z generation, Cognitive Reflection Test (CRT).

Jel Code: D01, D81, D91

Giriş

Prof. Frederick, 2005 yılında yayınladığı Cognitive Reflection and Decision Making (Bilişsel Yansıma ve Karar Verme) isimli makalesinde, katılımcılarına CRT (Bilişsel Yansıma Testi /Cognitive Reflection Test) adını verdiği IQ testi uygulamış ve kişilerin verdikleri cevaplara göre düşünce sistemlerini belirlemeyi amaçlamıştır. CRT'nin ardından kişilere sonuçları aynı olan ancak farklı çerçevelenmiş sorular yöneltmiş ve farklı düşünce sistemlerine sahip kişilerin tercihlerini incelemiştir. Bu araştırmadan çıkan sonuca göre, Sistem 1 (sezgisel düşünce yapısına sahip bireyler) mensupları çerçevelemenin etkisinde kalmışlardır. Ancak Sistem 2 (analitik düşünce yapısına sahip olan bireyler) mensupları çerçevelemenin etkisinde kalmamışlardır (Frederick, 2005).

Çalışmanın odak noktası olan Z kuşağı mensuplarının birçoğu henüz üniversiteden mezun olup çalışma hayatına dahi adım atmamış bireylerdir. Dünyada Z Kuşağı üzerine yapılmış çalışma sayısı çok değildir. Bu sebeple Z Kuşağı için "geleceğin gizemli çocukları" nitelemesi yerinde olacaktır. Ayrıca kendinden öncekilerin aksine Z Kuşağı, teknolojinin içine doğmuş bir kuşaktır. Bu da verdikleri kararların diğer kuşaklara göre farklılaşacağını düşündürmektedir (Kavalcı & Ünal, 2016). Bu ve benzeri sebeplerden ötürü Z Kuşağı çeşitli yönleri itibarıyla araştırılması gereken bir kuşaktır.

Bu çalışmada, Prof. Frederick'in 2005 yılında yayınladığı makale ve anket baz alınmıştır. Ancak kitlenin Z Kuşağına mensup öğrencilerden seçilmiş olması çalışmanın özgün niteliğini oluşturmaktadır. Amaç, geleceğin mimarı olacak olan jenerasyonun kararlarını davranışsal finans açısından incelemek, karar alırken düşünce sistemlerinin gerektirdiği şekilde çerçevelemelerin etkisinde kalıp kalmadıklarını analiz etmektir. Konya ilinde farklı liselerde eğitim görmekte olan rastgele örneklem yoluyla seçilmiş 300 öğrenciye çalışmanın ilerleyen bölümlerinde verilmiş olan anket soruları yöneltilmiş, öncelikle öğrencilerin Sistem 1 odaklı mı yoksa Sistem 2 odaklı mı düşündükleri tespit edilmiştir. Ardından öğrencilere negatif ve pozitif çerçevelenmiş sorular yöneltilerek düşünce sistemlerinin tercihleri üzerinde etkisi olup olmayacağının saptanması amaçlanmıştır. Z Kuşağı, kendilerine yöneltilen pozitif çerçevelenmiş sorulara önceki çalışmalar ile benzeşen cevaplar vermişse de negatif çerçevelenmiş sorularda yapılan tercihler öncekilerin aksi yönde olmuştur. Ayrıca anketlerde demografik sorulara da yer verilmiş, bu değişkenlerin karar verme üzerindeki etkisinin incelenmesi amaçlanmıştır.

1. Temel Kavramlar

1.1. Düşünce Sistemleri

Daniel Kahneman, Hızlı ve Yavaş Düşünme isimli kitabında insanların iki sisteme sahip olduklarını belirtir ve bu düşünce şekillerini Sistem 1 ve Sistem 2 şeklinde isimlendirir. Sistem 1; neredeyse hiç çaba sarf etmeden yaptığımız işlerdir. Beynimiz bunları herhangi bir dikkate ihtiyaç duymadan kendiliğinden/istem dışı yapar ve bu çok hızlı gerçekleşir. Örneğin, bildiğimiz bir dilde konuşmak, konuşulanları anlamlandırmak, billboard yazılarını okumak,

ani bir ses duyduğumuzda sesin kaynağına yönelmek gibi... (Kahneman, 2018). Sistem 2 devredeyken, bilinç, ilgi ve dikkat seviyesi daha yüksektir. Örneğin gürültülü bir ortamda tek kişinin sesine odaklanmak, topluluk içinde davranışlarınızı kontrol etmeye çalışmak, çift rakamlı sayıları akıldan çarpmak gibi... (Kahneman, 2018).

Sistem 1 sürekli olarak Sistem 2'ye öneriler sunar. Bu öneriler; izlenimler, niyetler, sezgiler, hisler vb. dir. Bu hisler Sistem 2 tarafından desteklenirse izlenim ve sezgiler inançlara, dürtüler de bilinçli eylemlere dönüşür. Sistem 2, Sistem 1 in önerilerini olduğu gibi yahut birkaç değişiklik yaparak benimser. Normal şartlarda Sistem 2'yi kullanarak yapılan eylemlerin birçoğunun kaynağı Sistem 1 dir. Fakat zorlu bir durumla karşılaşıldığında Sistem 2 yönetim ve kontrolü ele almaktadır (Kahneman, 2018).

Tüm bunların ardından bu çalışmanın sonraki başlıklarında bahsi geçecek olan Sezgisel ve Analitik düşünme konusuna gelince; daha önce de bahsedildiği üzere insanlar hem Sistem 1 hem de Sistem 2 odaklı düşünebilmektedirler. Fakat belli durumlarda Sistem 1'i ağır basan ya da Sistem 2 odaklı düşünen insanlar vardır. Sistem 1 odaklı düşünen insanlar; "Sezgisel Düşünenler" olarak adlandırılır. Sezgisel düşünenler, birçok durumda Sistem 1'in ağır basması sebebiyle hızlıca eyleme geçebilir, sorulan sorulara hızlı cevaplar verebilir ve bunların yanında aşırı özgüvene sahiptirler fakat bu gibi durumları Sistem 2 ile tahlil etmedikleri için eylemlerinin sonuçları veya cevapları yanlış olabilir. Sistem 2 odaklı düşünenler ise, "Analitik Düşünenler" olarak nitelendirilirler. Analitik düşünenler, Sezgisel düşünenlere göre olaylara biraz daha eleştirel yaklaşırlar. Analitik düşünenlerin eyleme geçmeleri veya yöneltilen sorulara cevap verme süreleri Sezgisel düşünenlerden biraz daha uzun olabilir ancak elde ettikleri çıktıların doğru olma ihtimali daha yüksektir (Kahneman, 2018).

1.2. Beklenti Teorisi ve Beklenen Fayda Teorisi

Beklenen Fayda Teorisi, belirsizlik durumlarında karar verirken rasyonel çerçeve içerisinde ekonomi davranışlarını açıklamada kullanılmıştır (Karabulut, 2013). Beklenen fayda teorisine göre bireyler belirsizlik ortamında alacakları kararlarda rasyonel davranarak, kendilerine en çok kar ve fayda sağlayacak olan seçeneği tercih ederler.

Beklenti Teorisi ise 1979 yılında Daniel Kahneman ve Amos Tversky tarafından ortaya atılmıştır ve insanın tamamen rasyonel olmadığını, kişinin duygularının ve bilişsel önyargılarının rasyonel karar almasını engellediğini savunmaktadır (Tekin, 2016).

Beklenti Teorisine göre insanların kazanç ve kayıp elde ettiklerinde hissettiklerinin şiddeti birbirinden farklıdır. Örneğin, bir yatırımcı 10.000 TL kazanç elde ettiğinde X oranında mutluluk duyarken 10.000 lira zarar ettiğinde 2X oranında üzüntü duymaktadır. Yani burada kazanç ve kayıp algısında bir asimetri vardır. Ayrıca beklenti teorisi, rasyonel karar almaya engel olan bilişsel faktörlerden birinin çerçeveleme olduğunu savunmaktadır (Shefrin & Statman, 2003).

1.3. Çerçeveleme

Çerçeveleme; spesifik bir konuyu insanlara sunuş şekli ve sunuş şeklinin, kişinin kararlarını etkilemesi olarak tanımlanabilir (Taner & Akkaya, 2005). Yani, insanların birçoğu geleneksel ekonominin varsaydığının aksine rasyonel kararlar vermek yerine ilgisini çeken kimi seçenekleri çerçeveleyerek bunlar arasından seçim yapmaktadırlar (Sefil & Çilingiroğlu, 2011). Bu konuyu bir örnek ile açıklamak gerekirse; Amerika'da organ bağışçısı olmak için ehliyet alınırken herhangi bir kazada organların bağışlanacağına dair bir belge imzalatılmakta ve bu belgenin imzalanıp imzalanmaması kişinin tercihine bırakılmaktadır. Bu tarz isteğe bağlı organ bağışı uygulaması yapan ülkelerde organ bağışı oranlarının sürücülerin dörtte birine veya çok daha azına karşılık geldiği görülmüştür. İkinci bir uygulamada ise ehliyet alan her sürücüyü organ bağışçısı kabul eden, organlarını bağışlamak istemeyen sürücülerin belge imzalamak durumunda kaldığı uygulama biçimidir. Bu uygulamanın yapıldığı ülkelerde organ bağışı oranı %90 dan fazladır. İkinci seçenekte var olan basit karar çerçevelemesinin, organ bağışı oranını önemli ölçüde artırdığı görülmektedir (Nofsinger, 2014).

Diğer bir örnek ise Daniel Kahneman tarafından yapılan "Asya Hastalığı Problemi" isimli deneydir. Deneyde katılımcılara sorulan iki sorudan ilki aşağıdaki gibidir:

"ABD'nin 600 kişiyi öldürmesi beklenen sıra dışı bir Asya hastalığı salgınına hazırlandığını düşünün. Hastalıkla savaşmak için iki alternatif program önerilmiş. Programın sonuçlarına ilişkin kesin bilimsel tahminlerin şunlar olduğunu varsayın:

Program A benimsenirse, 200 kişi kurtulacak

Program B benimsenirse, üçte bir olasılıkla 600 kişi kurtulacak ve üçte iki olasılıkla kimse kurtulamayacak" (Kahneman, 2018).

Bu iki program arasında yanıt vericilerin çoğunluğu A programını seçmiştir. Yani insanlar kesin olduğunu öngördüğü sonucu tercih etmişler, riskli sonuçtan kaçınmışlardır. Anketin devamında kişilere yöneltilen diğer sorular ise şu şekildedir;

"Program A1 benimsenirse, 400 kişi ölecek

Program B1 benimsenirse, üçte bir olasılıkla kimse ölmeyecek ve üçte iki olasılıkla 600 kişi ölecek" (Kahneman, 2018).

İkinci soruda ankete katılanların çoğunluğu ise, kesin sonuç tercihi yerine riskli seçeneği tercih etmişlerdir. Oysa bu iki soru dikkatle incelendiğinde: A-A1 ve B-B1 programlarının uygulanması durumunda ortaya çıkması muhtemel sonuçlarının tamamen aynı olduğu görülecektir. Ancak sorular farklı şekillerde çerçevelendiğinden cevaplarda da farklılaşmalar meydana gelmiştir. Bu deneyde ve var olan birçok deneyde de benzer sonuçlar elde edilmiştir. Yani, çerçevelemeler pozitif olduğunda insanlar, riskten kaçınma eğilimi göstererek kesin durumları; çerçevelemeler negatif olduğunda ise, insanlar kesin sonuçları reddederek riskli durumları tercih ederler. Bu da beklenti teorisi ile paralel bir durumdur. Burada anket yapılan kişilerin konunun uzmanı olmadıkları için beklenmedik cevaplar ortaya çıktığı düşünülebilir. Fakat aynı çalışma bir grup sağlık personeline yapılmış ve rastgele insanların verdiklerinden

çok da farklı cevaplar ortaya çıkmamıştır. Sonuç olarak; çıktıları aynı olsa dahi ifadeler değiştiğinde tercihler de değişmektedir (Kahneman, 2018).

1.4. Riskin Çerçevelenmesi

Davranışsal Finansın ortaya çıkışı ile birlikte insanların yatırımlarını yapmadan önce risklerini minimize etmek veya asimetrik bilgi problemini en aza indirgemek için matematiksel hesapları değil, algıladıkları riski dikkate aldıkları ve buna göre yatırımlarını yönlendirdikleri ortaya çıkmıştır (Şenkardeşler, 2016).

Riskin çerçevelenmesi konusunu bir örnekle açıklamak gerekirse, Prof. Frederick yukarıda örneği verilen "Asya Hastalığı Problemi" çalışmasının bir benzerini de öğrenciler üzerinde yapmıştır. Burada amaç, insanların finansal kararlar alırken de çerçevelerin etkisinde kalıp kalmadıklarını görmektir. Bu sebeple soruları finansal kazanç ve kayıp olmak üzere değiştirmiş, gene aynı sonuca çıkan farklı çerçeveli sorulara yer vermiştir. Bu araştırmada aşağıda yer alan sorular sorulmuştur;

Kazanç odaklı, pozitif çerçevelenmiş sorular:

1- Hangi seçenek sizin için daha tercih edilesidir?

A- Kesin olarak 100$ kazanmak

B- %50 ihtimalle 300$ kazanmak ya da %50 ihtimalle hiçbir getiri sağlayamamak.

Kayıp odaklı, negatif çerçevelenmiş sorular:

2- Hangi seçenek sizin için daha tercih edilesidir?

A- 100$ lık kesin kayıp

B- %50 ihtimalle 300 dolar kaybetmek yada %50 olasılıkla hiçbir şey kazanamamak (Frederick, 2005)*.*

Frederick bu çalışması ile Sistem 1'e mensup kişilerin çoğunun kazanç odaklı yani pozitif çerçevelenmiş soruda A seçeneğini, kayıp odaklı –negatif çerçevelenmiş- soruda ise B seçeneğini tercih ettiklerini gözlemlemiştir. Yani, Sezgisel düşünenler her iki sorunun da B seçeneğinin aynı kazanç yada kayıpla sonuçlanacağının farkına varamamış, çerçevelemenin etkisinde kalmışlardır. Sistem 2 mensupları ise çerçevelemenin etkisinde kalmamış, ortaya çıkacak sonuçların aynı olacağını tahmin etmiş ve her iki soruda da B seçeneğini tercih etmişlerdir.

Nofsinger ise Frederick'in araştırmasını bir adım ileri taşımış, aynı soruları finans alanında bilgili ve deneyimli meslek gruplarına yöneltmiştir. Bu çalışmanın sonucunda ise Frederick'in sonuçları değişmemiştir. Yani, kişilerin herhangi bir konu ile ilgili bilgi ve deneyimi ne olursa olsun, kararları üzerinde etkili olan en önemli faktörlerden biri düşünce sistemleridir (Nofsinger, 2014).

1.5. Düşünme Modunu Ölçme

Frederick tarafından hazırlanmış olan Bilişsel Yansıma Testi cevaplaması kolay ve hızlı olan üç soruluk bir testtir. CRT testin amacı Sezgisel düşünenler ile Analitik düşünenler arasında ayrım yapmaktır. Bu sorular, kısa bir muhakemenin ardından doğru cevaba ulaşılabilecek sorulardır. Hiç düşünmeden verilen cevapların yanlış olması muhtemeldir. Sezgisel düşünce yapısına sahip insanlara bu sorular yöneltildiğinde kişilerin hiç düşünmeden adeta refleks benzeri bir dürtü ile soruları cevapladıkları ve bu cevapların genellikle yanlış olduğu görülmüştür. Analitik düşünenlerin, Sezgisel düşünce yapısına sahip kişilere göre soruları daha dikkatli tahlil ettiği, bu durumun onların doğru cevaba ulaşma olasılıklarını artırdığı görülmüştür (Oechssler, Roider, & Schmitz, 2008).

Ayrıca sorulara verilen doğru cevap sayısı, kişinin sahip olduğu düşünce sistemini göstermektedir. 3 Sorudan 0-1 tanesine doğru cevap verenlerin Sistem 1, 2-3 soruya doğru cevap verenlerin Sistem 2 odaklı düşündükleri ifade edilmektedir (Nofsinger, 2014).

Bu sorular şu şekildedir;

> *"1-) Bir raket ve bir topun maliyeti 1.10$ dır. Raket toptan 1.00$ daha maliyetlidir. Topun maliyeti nedir? _____ sent*
>
> *(Sezgisel düşünenlerin muhtemel cevabı 10 sent olacaktır ancak doğru cevap 5 senttir.)*
>
> *2-) Eğer 5 makine 5 ürünü 5 dakikada üretiyorsa, 100 makine 100 ürünü kaç dakikada üretir? _____ dakika.*
>
> *(Sezgisel düşünenlerin muhtemel cevabı 100 dakika olacaktır ancak doğru cevap 5 dakikadır.)*
>
> *3-) Bir gölde bir nilüfer parçası vardır. Her gün bu parça iki kat büyüklüğe ulaşmaktadır. Eğer bu parça bütün gölü 48 günde kaplamış ise, gölün yarısını kaplaması kaç gün sürer? _____ gün*
>
> *(Sezgisel düşünenlerin muhtemel cevabı 24 gün, doğru cevap ise 47 gündür.)"* (Frederick, 2005)

1.6. Kuşaklar ve Düşünce Yapıları

Grafik 1, günümüzdeki kuşakların yılları ile birlikte görsele dökülmüş şeklidir. Ayrıca kuşakların 2019 yılında kaç yaşında olduklarını göstermektedir.

Grafik 1: Kuşakların Başlangıç/Bitiş Tarihleri ve Yaşları
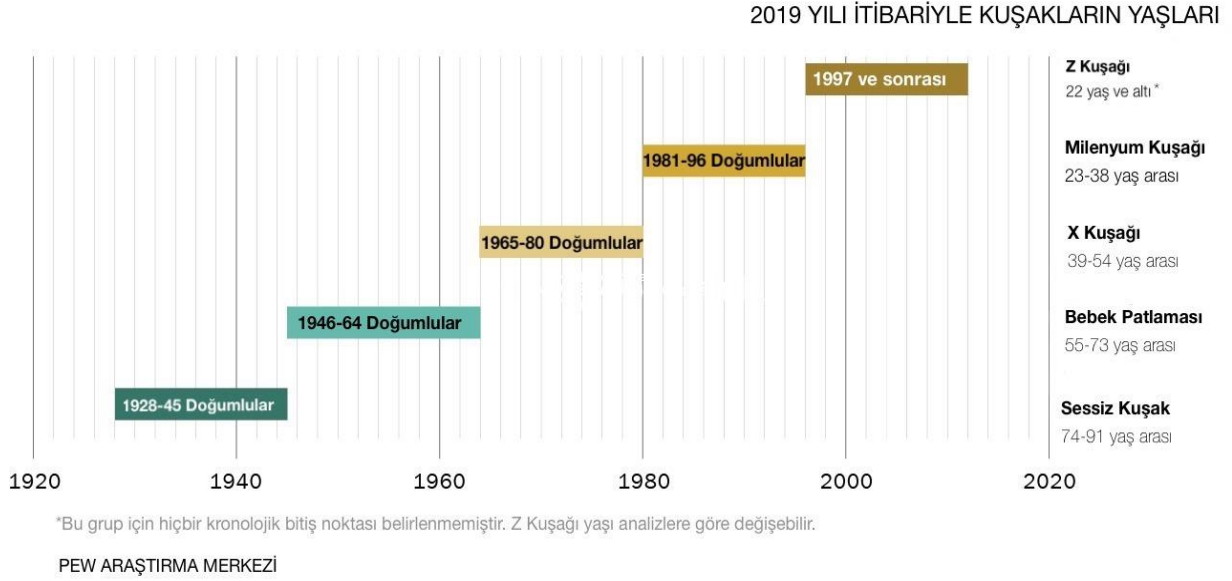
Kaynak: Pew Research Center, 2019

Kuşakların özelliklerinden kısaca bahsetmek gerekirse;

Sessiz Kuşak (Silent Generation) ; grafikte görüldüğü üzere 1928 ile 1945 yılları arasında doğan kişileri kapsar. Bu yıllar arasında Büyük Buhran ve II. Dünya Savaşı gibi sıkıntılı dönemler yaşanmıştır. Savaş sebebiyle nüfus artış hızı oldukça yavaşlamış, krizden dolayı yaşanan ekonomik sıkıntılar işsizliğe neden olmuş ve insanlar tasarrufa yönelmiştir. Bu kuşağa mensup kişilerin birçoğunun çocukluğu yoksulluk içinde geçmiştir. Otoriteye duydukları saygıdan dolayı sessiz kuşak ismini almışlardır (Gündüz & Pekçetaş, 2018).

Bebek Patlaması (Baby Boomers) Kuşağı; 1946-1964 yılları arasında dünyaya gelmiş kişilerdir. 1945 yılında ikinci dünya savaşının sona ermesinin ardından nüfus patlaması yaşanmış ve bu kuşağa Bebek Patlaması Kuşağı ismi verilmiştir. Dönemin önemli olayları arasında kadın hakları ve insan hakları hareketleri sayılabilir. Büyümenin yüksek olduğu ve arzın talebin gerisinde kaldığı bu dönemde insanlar harcama ve refah içinde yaşama eğiliminde olmuşlardır (Gündüz & Pekçetaş, 2018).

X Kuşağı (Generation X) ise 1965-1980 doğumluları kapsamaktadır. X Kuşağı için, kariyer odaklı bir kuşak olduğu ve iş hayatında kişisel gelişim, özlük hakları, sonuç odaklılık, rekabetçilik gibi değerleri önemsediği söylenebilir. Ayrıca bu dönemde kadınlar iş hayatında aktif olarak rol almışlardır (Taş & Kaçar, 2019).

Y kuşağı (Generation Y), 1981-1996 yılları arasında doğmuş insanlardır. Bu kişiler dünyanın teknolojiye geçişine bizzat tanık olmuşlardır ve kendilerini teknolojiye oldukça kolay adapte etmişlerdir (Taş & Kaçar, 2019).

Son olarak Z kuşağı (Generation Z) 1997 ve sonrasında doğan kişilerdir. Bu dönemin en ayırt edici özelliği teknolojinin neredeyse takip edilemeyecek kadar hızlı bir gelişim seyretmesidir.

Z kuşağı teknoloji ile aşırı münasebetleri sebebiyle sosyal yaşantıları az, dolayısıyla yalnız kalmayı tercih eden bir nesildir. Bu kuşak teknolojiye, zevklerine ve kendilerine oldukça düşkün; sonuç odaklı bir nesildir (Taş & Kaçar, 2019).

2. Yöntem

Bu çalışmada araştırma deseni olarak nicel araştırma metodu kullanılmış olup, veri toplama şekli olarak, anket yöntemi tercih edilmiştir. Anketler yazılı olarak, öğrencilerin sınıf ortamlarında gözlem altında yanıtlama yöntemi kullanılarak, rastgele örneklem yoluyla seçilmiş, farklı okullarda eğitim gören yaklaşık 300 öğrenci ile tamamlanmıştır.

Anketler üç ana başlıktan oluşmaktadır. Birinci bölümde öğrencilerin demografik yapılarına yönelik (cinsiyet, okul türü, kardeş sayısı, ebeveyn öğrenim durumu, aile ortalama geliri) sorular yöneltilmiştir. İkinci kısımda Prof. Frederick tarafından geliştirilen CRT Test soruları yöneltilmiş, üçüncü bölümde ise öğrencilerin düşünce sistemleri ile risk tercihleri arasındaki bağlantının tahlil edilebilmesi amacıyla iki adet farklı çerçevelenmiş sorular yöneltilmiştir.

Anketlerin ikinci ve üçüncü bölümlerinde yer alan sorular, çalışmanın farklı bölümlerinde verilmiştir. Anketlerden elde edilen veriler SPSS'18 programı kullanılarak analiz edilmiş, çalışmanın muhtelif bölümlerinde yer bulan Grafikler ise SPSS'18 veya Microsoft Excel 2016 programları kullanılarak oluşturulmuştur. Anket soruları açık uçlu ve kapalı uçlu sorular şeklinde yöneltilmiştir.

3. Bulgular

3.1. Z Kuşağı Düşünce Yapısı

Çalışmanın asıl konusuna gelindiğinde; bu çalışma anketler yoluyla Z kuşağı (1997 yılından sonra dünyaya gelenler) üzerine yapılmış bir çalışmadır. Anketler birbirinden farklı alanlarda üç farklı lisede eğitim gören öğrencilere uygulanmıştır. Bu liselerden ilki uluslararası müsabakalara sporcu yetiştiren devlet tabanlı bir Spor Lisesidir. İkincisi, programında dini eğitim veren devlet tabanlı Anadolu İmam Hatip Lisesidir. Anketler son olarak ücretli eğitim veren bir özel lisede uygulanmıştır.

Anketlerde yer alan demografik soruların ardından öğrencilerin hangi düşünce sistemine sahip olduklarını tespit etmek amaçlanmıştır. Bunun için öğrencilere bu çalışmanın "Düşünce Modunu Ölçme" başlığında bahsi geçen Frederick tarafından geliştirilmiş CRT test adı verilen üç soru sorulmuştur.

1. 5 makine 5 ürünü 5 dakikada yapıyorsa; 100 makine 100 ürünü kaç dakika da üretir?
……………………………………………………...

2. Bir gölde bir nilüfer vardır. Her gün bu nilüfer iki katı kadar büyümektedir. Nilüfer gölün tamamını 48 günde kaplamış ise gölün yarısını kaç günde kaplamıştır?
……………………………………………………...

3. Bir raket ve bir topun maliyeti 1.10 TL'dir. Raket toptan 1 TL daha fazla maliyete sahiptir. Topun maliyeti nedir?

…………………………………………………..

Soruların cevapları sırasıyla 5 dakika, 47 gün ve 5 kuruş'tur. Yukarıda da bahsedildiği üzere, bu soruların 0-1 tanesine doğru cevap verenlerin Sezgisel (Sistem 1), 2-3 tanesine doğru cevap verenlerin Analitik (Sistem 2) düşünce yapısına sahip oldukları varsayılmaktadır (Nofsinger, 2014).

Grafik 2: Z Kuşağı Düşünce Yapısı
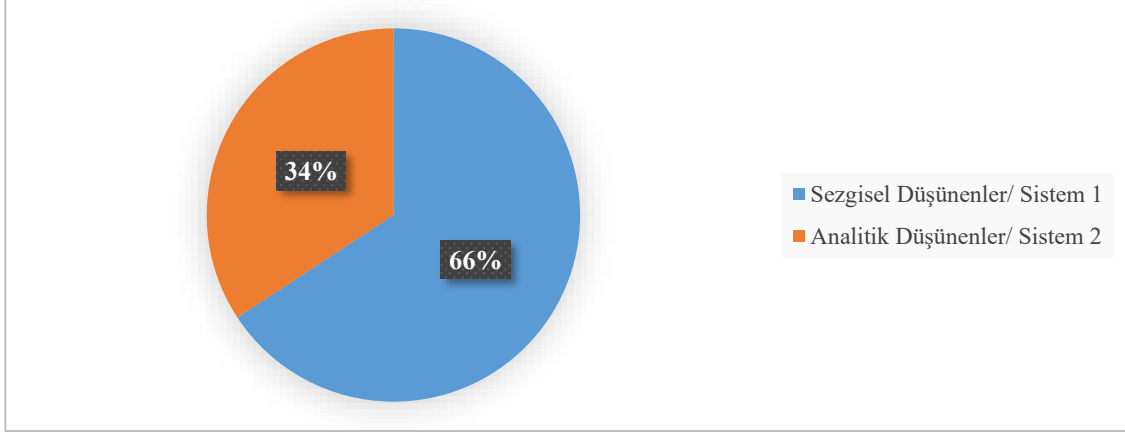
Grafik 2, anket uygulanan öğrencilerin düşünce sistemlerindeki dağılımı göstermektedir. Grafikten de anlaşılacağı üzere, öğrencilerin %34'ü Analitik, %66'sı Sezgisel düşünce yapısına sahiptir.

Tablo 1, tüm sorular için ayrı ayrı öğrencilerin doğru cevap verme oranlarını göstermektedir.

Tablo 1: CRT Test Sorularına Verilen Cevaplar

Sorular	Doğru Cevap (%)	Yanlış Cevap (%)	Standart Sapma
Makine	32.6	67.4	46.97
Nilüfer	38.8	61.2	48.82
Top- Raket	31.6	68.4	46.57

Tablo 1'den de görüldüğü üzere öğrencilerin %32.6'sı makine sorusuna doğru cevap verirken %67.4'ü yanlış cevap vermiştir. Nilüfer sorusunda ise öğrencilerin %38.8'i doğru cevap verirken %61.2'si yanlış cevap vermiştir. Son olarak Top-Raket sorusuna ise öğrencilerin %31.6'sı doğru cevap verirken %68.4'ü yanlış cevap vermiştir.

3.2. Demografik Bulgular ve CRT Test

Bu çalışmada kullanılan ankette CRT test ve Çerçeveleme soruları dışında bazı demografik sorular da yer almaktadır. Buradaki amaç, CRT Test ve Çerçeveleme sorularına verilen cevapların öğrencilerin demografik yapılarıyla bir ilişkisi bulunup bulunmadığını saptamaya çalışmaktır.

Tablo 2, ankete katılan öğrencilerin genel demografik yapılarını göstermektedir.

Tablo 2: Demografik Sonuçlar

Demografik Yapı	
Cinsiyet	
Kız	%56,70
Erkek	%43,30
Okul Türü	
Özel Lise	%24,74
İmam/Hatip Lisesi	%32,99
Spor Lisesi	%42,27
Kardeş Sayısı	
1 Kardeş	%4.10
2 Kardeş	%22.94
3 Kardeş	%46.23
4 Kardeş	%18.49
5 Kardeş ve Fazlası	%12.50
Baba Öğrenim Durumu	
İlköğretim	%38.14
Ortaöğretim	%34,02
Lisans	%24,40
Yüksek Lisans/ Doktora	%3,44
Anne Öğrenim Durumu	
İlköğretim	%61.51
Ortaöğretim	%22,68
Lisans	%14,43
Yüksek Lisans/ Doktora	%1,37
Aile Aylık Ortalama Geliri	
2000'den Az	%6,53
2000-5000 TL Arası	%58,42
5000-10000 TL Arası	%25,77
10000 TL Fazlası	%9,28

Tablo 3 ise öğrencilerin demografik yapıları ile CRT Test sorularına verdikleri cevaplar arasındaki ilişkiyi ele almaktadır. Bu tablo oluşturulurken SPSS'18 Programı kullanılmış, cinsiyet değişkeni için T Testi, diğer değişkenler için ise Anova Testi yapılmıştır.

Nevra Yıldırımer, Sevgi Bal, Fadime Alp, Kamola Bayram

Tablo 3: Demografik Yapı ve CRT Skor İlişkisi

Özellikler	Makine	Nilüfer	Top& Raket	TOPLAM
Cinsiyet:				
Erkek	0.13	0.17	0.08	**0.39**
Kız	0.19	0.21	0.23	**0.64**
t	0.299*	0.000*	0.986*	**1.285***
Okul Türü:				
İmam Hatip Lisesi	0.16	0.19	0.17	**0.54**
Özel Lise	0.07	0.14	0.13	**0.35**
Spor Lisesi	0.08	0.05	0.0034	**0.13**
f	0.000*	0.000*	0.000*	**0.000***
Kardeş Sayısı:				
1	0.05	0.05	0.01	**0.11**
2	0.24	0.21	0.23	**0.69**
3	0.53	0.53	0.54	**1.61**
4	0.12	0.15	0.19	**0.47**
+5	0.04	0.05	0.01	**0.10**
f	0.071*	0.111*	0.013*	**0.195***
Ebeveyn Öğrenim Durumu				
İlköğretim	0.25	0.18	0.19	**0.66**
Ortaöğretim	0.32	0.30	0.25	**0.87**
Üniversite	0.35	0.40	0.45	**1.22**
Yüksek Lisans/ Doktora	0.05	0.07	0.09	**0.23**
f	0.076*	0.000*	0.000*	**0.076***
Ortalama Gelir				
-2000	0.04.	0.0088	0.01	**0.06**
2000-5000	0.68	0.68	0.72	**2.09**
5000-10000	0.17	0.21	0.21	**0.60**
+10000	0.09	0.09	0.04	**0.23**
f	0.073*	0.003*	0.001*	**0.077***

P<0.05

Cinsiyet: Tabloya bakıldığında sorulara doğru cevap verme oranı erkeklere göre kızlarda daha yüksektir. Sorulara teker teker bakılırsa, Makine ve Top-Raket sorusunda cinsiyete göre anlamlı bir farklılaşma yoktur. Nilüfer sorusu için anlamlı bir farklılaşma olduğu görülse de toplama bakıldığında cinsiyet değişkeninin sorulara doğru cevap verme açısından doğrudan etkili olmadığı görülmektedir.

Okul Türü: Tablodan da görüldüğü üzere, İmam Hatip Lisesi öğrencilerinin soruları doğru cevaplama yüzdesi diğer öğrencilere göre daha yüksektir ve yapılan testler sonucunda okul değişkeninin doğru cevap verme üzerinde doğrudan etkili olduğu görülmektedir.

Kardeş sayısı: 3 kardeş olan öğrencilerin sorulara doğru cevap verme oranı diğer öğrencilere göre daha fazla olsa da kardeş sayısı ile doğru cevaplar arasında net bir bağlantı kurulamaz.

Ebeveyn öğrenim durumu: Tabloya bakıldığında ebeveynleri üniversite mezunu olan çocukların sorulara doğru cevap verme oranı daha yüksektir, ancak yapılan analizler neticesinde ebeveyn öğrenim durumu ile sorulara verilen cevaplar arasında anlamlı bir ilişki bulunmamaktadır.

Ortalama Gelir: Tablodan da görüleceği üzere aylık 2000-5000 TL arası geliri olan ailelerin çocukları oransal olarak diğerlerine göre sorulara daha doğru cevaplar vermişlerdir. Fakat ebeveyn öğrenim durumundan çıkan yukarıdaki sonuç ile benzer şekilde burada da toplama bakıldığında gelir ile doğru cevap verme arasında bir ilişki saptanmamıştır.

3.3. Z Kuşağında Çerçeveleme Etkisi

Çerçeveleme yukarıda da bahsedildiği üzere bir durumu karşıdakine sunuş şekline bağlı olarak kişinin kararlarında meydana gelen değişikliktir. Burada, "Riskin Çerçevelenmesi" başlığında söz edilen Frederick'in yaptığı çalışmanın benzeri Z kuşağı için yapılmıştır. Sorular Frederick'in çalışmasındakine benzer şekilde negatif ve pozitif çerçevelemeler yapılarak hazırlanmıştır;

1. *Size A) %100 olasılıkla (kesin) 10.000 TL kazanmak ile*

B) %50 olasılıkla (yarı yarıya) 50.000 TL kazanma seçeneği sunulsa hangisini tercih edersiniz?

2. *Veya; A) %100 olasılıkla 10.000 TL kaybedeceksiniz.*

B) %50 olasılıkla 50.000 TL kaybedeceksiniz. Bu iki seçenek arasından hangisini seçersiniz?

Sorulara dikkatli bakıldığında aslında her iki sorunun da *B* seçeneğinin sonuçları aynıdır. Fakat birinci sorunun *B* seçeneği pozitif, ikinci sorunun *B* seçeneği negatif çerçevelenmiştir. Geçmişte yapılan çalışmalar göz önüne alındığında, Sezgisel düşünenlerin pozitif çerçevelenmiş birinci soruda risk almayarak *A* şıkkını, ikinci soruda ise çerçevelemenin etkisinde kalarak yani, her iki sorunun da *B* şıkkının aynı sonuçları doğuracağını fark edemeyerek, risk almaktan kaçınacakları ve riskli kayıp yerine kesin kayıp olan *A* seçeneğini tercih edecekleri varsayılmaktadır. Analitik düşünenler ise her iki sorunun da *B* seçeneğinin aynı sonuçları doğurduğunu fark edeceklerdir. Birinci soruda riskli seçeneğin getirisi fazla olacağından *B* şıkkını, ikinci soruda ise sonuçlar önceki soru ile aynı olacağı için gene *B* seçeneğini tercih edecekleri düşünülmektedir (Frederick, 2005).

Grafik 3: Z Kuşağı Düşünce Yapılarına Göre Çerçeveleme Etkisi
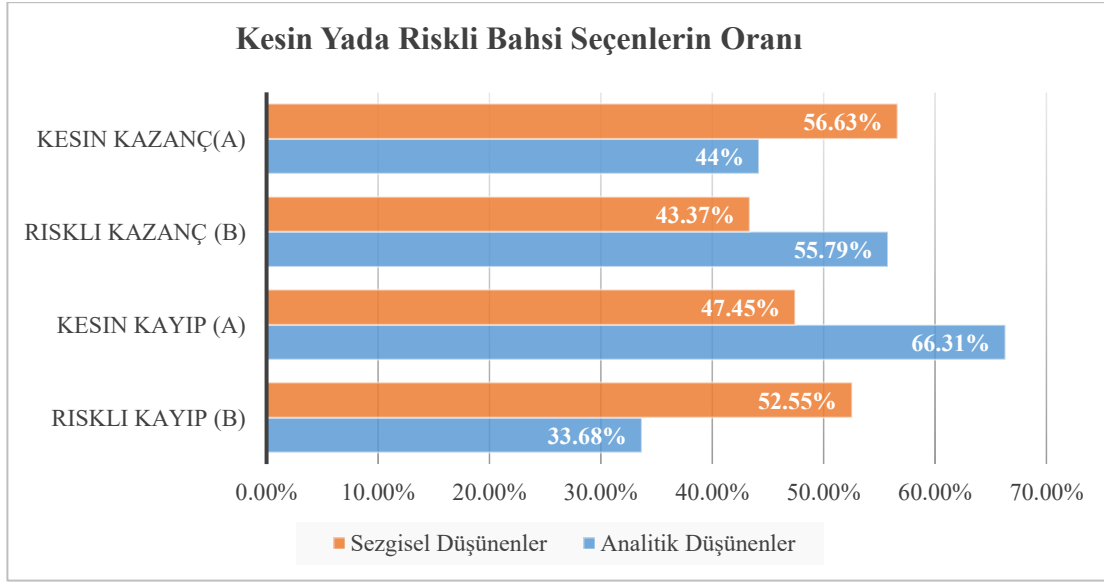
Yukarıdaki varsayımlar bağlamında Z kuşağının tercihleri Grafik 3'te yer almaktadır. Görüleceği üzere Sistem 1- Sezgisel düşünenler Prof. Frederick'in çalışmasının sonuçlarıyla benzer şekilde birinci soruda kesin kazancı tercih etmişlerdir. Ancak gene Sezgisel düşünenler ikinci soruda beklenenin aksine negatif çerçevelemenin etkisinde kalmayıp, kesin kayıp tercihi yapmak yerine riskli kaybı tercih etmişlerdir. Analitik düşünenler-Sistem 2 ise 1. Soruda beklendiği gibi riskli kazancı tercih ederken, ikinci soruda beklenenin aksine çerçevelemenin etkisinde kalmışlar, riskli kayıp tercihi yapmak yerine kesin kayıp seçeneğini tercih etmişlerdir. Burada pozitif çerçevelenmiş durumlarda öğrencilerin beklenen davranışlar sergilemelerine rağmen, negatif çerçevelenmiş durumlarda varsayılanın tam aksi yönde tercihler yapmaları dikkat çekicidir.

Tablo 4'te ise öğrencilerin çerçeveleme sorularına verdikleri cevaplar SPSS programında korele edilmiştir. Bu tablo, yukarıda bahsi geçen bulguyu destekler niteliktedir. Zira Z Kuşağında Sistem 1 mensuplarının riskli tercihler yapmak yerine kesin seçenekleri tercih edecekleri düşünülmekteydi ancak beklenmedik bir şekilde negatif çerçevelenmiş sorularda çerçeveleme etkisinde kalmayarak riskli seçeneği tercih ettiler. Benzer şekilde Sistem 2 mensuplarının da her iki soruda riskli tercih yapacakları varsayılmıştır. Fakat tersine negatif çerçevelenmiş sorularda çerçevelemenin etkisinde kalarak kesin kayıp tercihi yapmışlardır.

Tablo 4: CRT Skor ve Çerçeveleme Etkisi

Değişken	Sistem 1	Sistem 2
Risk Tercihi	0.662	0.069

Tablo 4, –Z Kuşağı için- CRT soruları ile çerçevelemeler arasında herhangi bir bağlantı olmadığını göstermektedir. Öğrencilerin düşünce sistemleri ile risk tercihleri arasında anlamlı bir korelasyon yoktur.

3.4. Cinsiyet Etkisi

Z kuşağının düşünce yapısı bir önceki başlık altında incelenmiştir. Çalışmanın bu bölümünde ise Z Kuşağının cinsiyetlerine göre düşünce sistemleri ve farklı çerçevelenmiş sorulara verdikleri cevaplar arasındaki ilişki incelenecektir.

Tablo 5: Cinsiyete Göre CRT Skor ve Çerçeveleme Etkisi

Düşünce Sistemi	Erkek Öğrenciler	Kız Öğrenciler
Sistem1/Sezgisel Düşünenler	%69.7	%66.3
Sistem2/Analitik Düşünenler	%30.7	%33.9
Çerçeveleme Etkisi		
1.Soru/A seçeneği-Kesin Kazanç	%48.1	%56.3
1.Soru/B seçeneği-Riskli Kazanç	%51.9	%43.6
2.Soru/A seçeneği-Kesin Kayıp	%46.5	%58.7
2.Soru/B seçeneği-Riskli Kayıp	%53.5	%41.3

Tablo 5'ten de görüleceği üzere erkeklerin %69'u Sezgisel, %30'u Analitik düşünmektedir. Kızların ise %66'sı Sezgisel, %33'ü analitik düşünmektedir. Çerçeveleme sorularında ise birinci Soruda erkeklerin %51'i riskli kazancı, %48'i kesin kazancı tercih etmişlerdir. İkinci soruda ise %46'sı kesin kayıp, %53'ü riskli kayıp tercihi yapmıştır. Kız öğrencilerin ise birinci soruda %56'sı kesin kazanç, %43'ü riskli kazancı tercih ederken ikinci soruda %58'i kesin kayıp, %41'i ise riskli kayıp tercihi yapmıştır.

Yani, her iki soruda da kızlar erkeklere oranla daha kesinci davranmışlar ve risk almamışlardır. Burada erkekler aşırı güven davranışı sergilemiş ve risk almışlardır. Bu durum erkeklerin yatırım yaparken kadınlara göre kendilerine daha çok güvendiğini gözler önüne seren araştırmaları akla getirmektedir (Nofsinger, 2014). Yani; erkeklerin herhangi bir gelirleri olsun veya olmasın yatırımlar konusunda kadınlara göre kendilerine daha fazla güvenmektedirler. Reel piyasalarda böyle bir güven duygusunun tecrübe, gelir, asimetrik bilgi gibi farklı sebepleri olabilir. Ancak bu çalışma aynı yaş grubundaki öğrenciler ile yapıldığı ve her iki tarafın ne tecrübesinin ne de gelirinin olmadığı dikkate alındığında bahsi geçen güven duygusunun sebebinin bilişsel, çevresel, psikolojik veya yetiştirme tarzına bağlı olabileceğini düşünmek mümkündür.

3.5. Okul Etkisi

Çalışmanın bu bölümünde, Z Kuşağının öğrenim gördükleri okullara göre düşünce sistemleri ve farklı çerçevelenmiş sorulara verdikleri cevaplar incelenmiştir. Yukarıda verilmiş olan,

Tablo 2'den de görüleceği üzere, ankete katılan öğrencilerin %42'si Spor Lisesinde, %33'ü İmam/Hatip Lisesinde, %24'ü ise Özel Lise'de eğitim görmektedir.

Tablo 6: Okullara Göre CRT Skoru ve Çerçeveleme Etkisi

Düşünce Sistemi	Spor Lisesi	İmam/Hatip Lisesi	Özel Lise
Sistem 1/ Sezgisel Düşünenler	%91.1	%43.7	%57.2
Sistem 2/ Analitik Düşünenler	%8.8	%56.2	%47.2
Çerçeveleme Etkisi			
1.Soru/A seçeneği-Kesin Kazanç	%55	%42.10	%63.88
1.Soru/B seçeneği-Riskli Kazanç	%45	%57.89	%36.11
2.Soru/A seçeneği-Kesin Kayıp	%48.33	%60.00	%52.77
2.Soru/B seçeneği-Riskli Kayıp	%51.67	%40.00	%47.22

Tablo 6, ilk etapta okullara göre öğrencilerin sahip oldukları düşünce sistemlerini göstermektedir. Spor Lisesi öğrencilerinin %91'i Sezgisel, %8'i Analitik düşünmektedir. İmam/Hatip Lisesi öğrencilerinin ise %43'ü Sezgisel, %56'sı Analitik düşünmektedir. Son olarak Özel Lise öğrencilerinin %57'si Sezgisel, %47'si Analitik düşünmektedir.

Çerçeveleme ile ilgili bulgulara gelindiğinde, Spor Lisesi öğrencileri pozitif çerçevelenmiş olan 1. Soruda -Sezgisel düşünce tercihleri ile paralel olarak- %55 lik çoğunlukla kesin kazancı tercih etmişlerdir. 2. Soruda ise öğrencilerin %51'i riskli kayıp seçeneğini tercih etmiş, çerçeveleme etkisinde kalmamışlardır. Yani; %91 gibi yüksek bir oranda Sezgisel düşünen öğrenciler Frederick'in varsayımının aksine birinci soruda çerçeveleme etkisinde kalırken ikinci soruda çerçeveleme etkisinde kalmayarak riskli kayıp tercihi yapmışlardır. Bu durum Z kuşağı genel tercihleri ile paralellik göstermektedir.

İmam Hatip Lisesi öğrencileri, pozitif çerçevelenmiş olan 1. Soruda -Analitik düşünceyle paralel olarak- %57 riskli kazancı tercih etmişlerdir. İkinci soruda ise bu sefer Sezgisel düşünceyle paralel olarak %60 gibi bir oranla kesin kayıp seçeneğini tercih etmişlerdir. Çoğunluğu Analitik düşünen öğrencilerin negatif çerçevelenmiş sorularda çerçevelemenin etkisinde kalmış olmaları dikkat çekicidir.

Son olarak Özel Lise öğrencileri her iki soruda da tam bir Sezgisel düşünce yapısının vereceği cevapları vererek pozitif çerçevelenmiş 1. Soruda kesin kazancı, negatif çerçevelenmiş 2. Soruda ise çerçevelemenin etkisinde kalarak kesin kayıp tercihi yapmışlardır. Yani, Özel Lisede okuyan öğrenciler Frederick'in varsayımı ile paralel olarak Sezgisel düşünce yapısına uygun seçenekleri tercih etmişlerdir.

3.6. Kardeş Sayısı

Grafik 4: Kardeş Sayısına Göre Çerçeveleme Etkisi
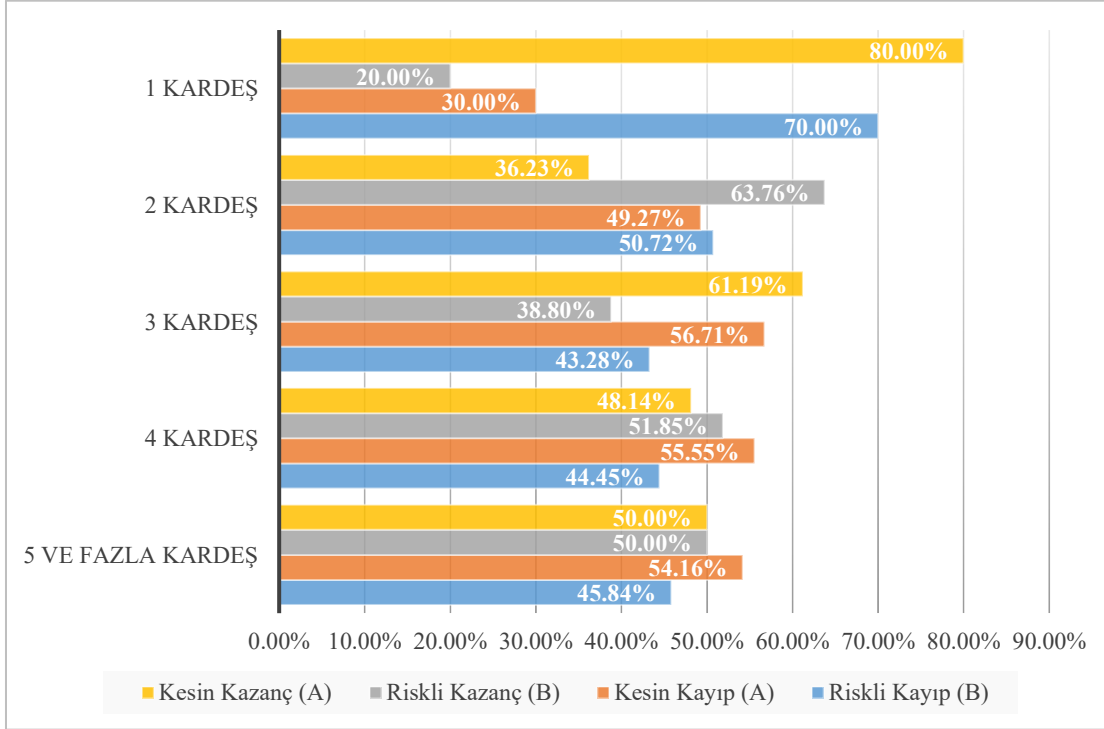
Grafik 4'ten de görüleceği üzere; bir ailenin tek çocuğu olan öğrenciler birinci soruda Sezgisel düşünme eğilimi gösteren kişiler gibi A seçeneğini işaretlemişse de (%80) ikinci soruda %70 oranında Analitik düşünme eğilimi göstererek kesin kayıp yerine riskli kaybı tercih etmişlerdir. Bu durum Z kuşağının tercihleriyle paralellik göstermektedir.

İki kardeş olan öğrenciler; Analitik düşünce örneği sergilemişler ve her iki soruda da çerçevelemeden etkilenmeyerek riskli durumları tercih etmişlerdir.

Üç kardeş olan öğrenciler; Sezgisel düşünce örneği göstererek her iki soruda da A seçeneğini yani kesin kazanç ve kesin kaybı tercih etmişlerdir.

Dört kardeş olan öğrencilerin verdikleri cevaplar oransal olarak birbirlerine yakın olsa da seçimler tek bir düşünce sisteminin vereceği cevaplar üzerinde toplanmamış, çoğunluk birinci soruda riskli kazanç seçeneğini tercih etse de ikinci soruda kesin kaybı tercih etmişlerdir. Burada da Z kuşağının genel yapısından farklı bir durum gözlenmektedir.

Son olarak beş kardeşten biri olan öğrencilerin seçimlerine gelirsek; 1. Soru için eşit cevaplar verilmiş ikinci soru içinse kesin kayıp tercihi öne çıkmıştır.

3.7. Ebeveyn Öğrenim Durumu

Grafik 5, öğrencilerin ebeveynlerinin öğrenim durumlarına göre yaptıkları tercihleri göstermektedir. Burada ebeveynler ilk ve ortaöğretim - lisans ve lisansüstü olmak üzere iki gruba ayrılmıştır.

**Grafik 5:** Z Kuşağı Ebeveyn Eğitim Derecesine Göre Çerçeveleme Etkisi
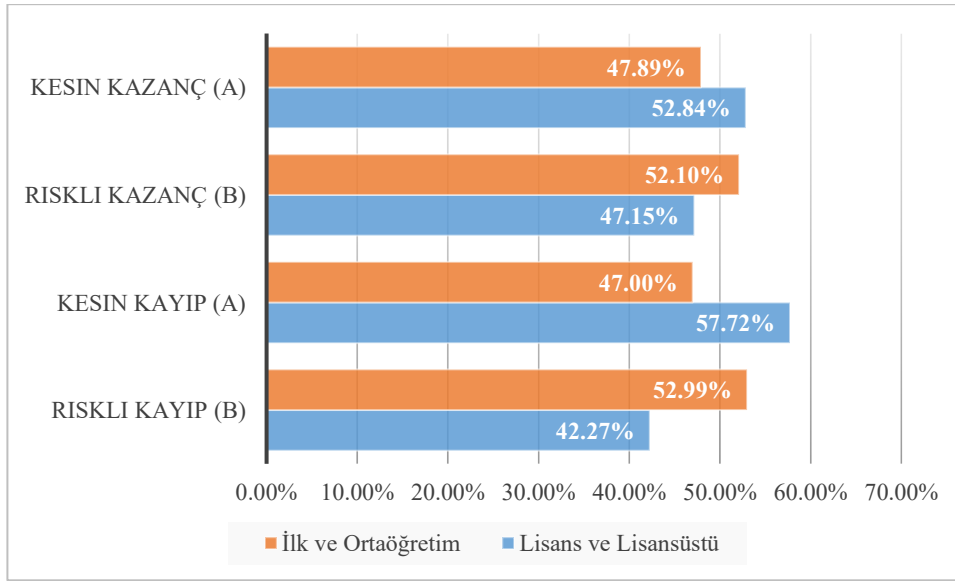
Grafik 5'te görüldüğü üzere ebeveynlerinden biri veya her ikisi ilköğretim veya ortaöğretim mezunu olanlar 1. Soruda Analitik düşünme eğilimi göstererek riskli kazancı ikinci soruda ise Sezgisel düşünerek kesin kaybı tercih etmişlerdir. Yani bu kişiler Frederick'in varsaydığından farklı davranarak bu çalışmada araştırılan Z kuşağının genel düşüncesi ile aynı doğrultuda tercihler yapmışlardır.

Ebeveynlerinden biri veya her ikisi lisans veya lisansüstü mezunu olanlar ise birinci soruda kesin kazancı, ikinci soruda ise kesin kaybı tercih etmişlerdir. Burada ilginç olan bu kişiler tamamen Sezgisel düşünceye uygun cevaplar vermişler ve ebeveynleri ilk ve ortaöğretim mezunu olanlardan ayrılmışlardır.

3.8. Aile Ortalama Geliri

Grafik 6, öğrencilerin ailelerinin ortalama gelirine göre yaptıkları tercihleri göstermektedir.

Grafik 6: Z Kuşağı Aile Gelirine Göre Çerçeveleme Etkisi
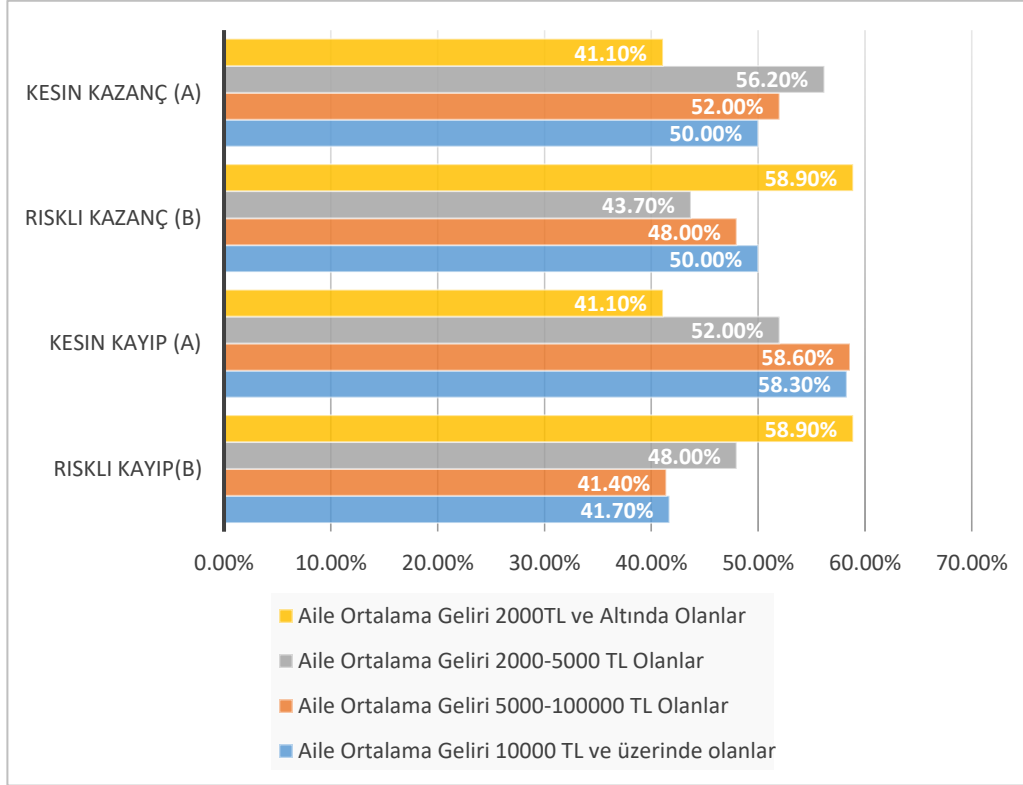
Grafik 6'da görüldüğü üzere ailesinin aylık geliri 2.000 TL ve altında olan öğrenciler 1. ve 2. sorularda tamamen Analitik düşünce örneği olarak riskli kazanç ve riskli kaybı tercih etmiş, çerçevelemenin etkisinde kalmamışlardır.

Ailesinin geliri aylık 2.000-5.000 TL olan öğrenciler ise ağırlıklı olarak Sezgisel düşünme eğilimi göstermişler ve her iki durumda da kesin kazanç ve kesin kaybı tercih ederek çerçeveleme etkisinde kaldıklarını göstermişlerdir.

Aile gelirleri aylık 5.000-10.000 TL olan öğrenciler ağırlıklı olarak Sezgisel düşünme eğilimi göstermişler ve her iki durumda da kesin kazanç ve kesin kaybı tercih ederek çerçeveleme etkisinde kalmışlardır.

Son olarak aile gelirleri aylık 10.000 TL ve üzerinde olan öğrenciler ise pozitif çerçevelenmiş olan birinci soruda eşit oranlarda tercihler yapmışlar, 2. soruda ise Sezgisel düşünme eğilimi göstererek kesin kaybı tercih etmişler ve negatif çerçevelemenin etkisinde kalmışlardır.

Bu verilerden hareketle, aylık 2.000 TL'den daha az kazanan ailelerin çocukları dışındaki diğer tüm grupların neredeyse tamamı pozitif çerçevelemede bile/dahi risk almamış, negatif çerçevelemede ise çerçevelemenin etkisinde kalmışlardır. Burada öğrencilerin tamamı Z kuşağının genel düşünce yapısından farklı tercihler gerçekleştirmişlerdir. Aynı zamanda kısıtlı maddi şartlarda yetişmiş öğrencilerin risk almak pahasına çok kazandıran tercihler yapması ancak normal veya yüksek standartlarda büyümüş öğrencilerin risk almaması oldukça dikkat çekicidir.

Sonuç

Davranışsal Finansın en temel ilkesi -geleneksel finansın varsaydığının aksine- insanların yaptıkları birçok tercihte rasyonel davranmadığını, karar verme sürecinde duygusal ve bilişsel birçok faktörün karar almada etkili olduğudur. Bu temel ilke kapsamında birçok teori ortaya atılmış, bu teorilerin doğruluğunu veya yanlışlığını kanıtlamak amacıyla birçok araştırma yapılmıştır. Yapılan bu araştırmalardan biri de Frederick'in *"Cognitive Reflection and Decision Making"* isimli çalışmasıdır. Bu çalışma, Frederick (2005) başta insanların IQ'sunu ölçmeyi ve IQ sonuçları ile kişilerin çerçevelemelere verecekleri yanıt arasında bir bağlantı olup olmayacağını ölçmeyi amaçlamıştır. Burada ortaya çıkan sonuç kişilerin IQ seviyeleri ile farklı çerçevelenmiş sorulara verdikleri yanıtlar kuvvetli bir bağlantı taşımaktadır.

Bu çalışma, Frederick'in araştırmaları ışığında Z Kuşağı üzerinde yapılmıştır. Öncelikle katılımcıların düşünce sistemlerini belirlemek için sorular sorulmuş ardından kişilere negatif ve pozitif çerçevelenmiş sorular yöneltilmiştir. Burada beklenen, sezgisel düşünce yapısına sahip kişilerin her iki soruda çerçevelemenin etkisinde kalarak pozitif çerçevelenmiş ilk soruda kesin kazanç, negatif çerçevelenmiş ikinci soruda ise kesin kayıp seçeneğini tercih ederken, analitik düşünenlerin çerçeveleme etkisinde kalmamaları, pozitif çerçevelenmiş ilk soruda riskli kazanç, negatif çerçevelenmiş ikinci soruda ise riskli kayıp seçeneğini tercih etmeleridir. Zira riskli seçenekler farklı şekillerde çerçevelenmişse de sonuçları aynıdır ve bu aynılığın analitik düşünenler tarafından fark edileceği varsayılmaktadır.

Katılımcılardan sezgisel düşünenler pozitif çerçevelenmiş soruda beklendiği gibi kesin kazancı tercih ederken, analitik düşünenler de pozitif çerçevelenmiş sorularda beklendiği gibi riskli kazanç seçeneğini tercih etmişlerdir. Araştırmanın ilgi çeken sonuçları negatif çerçevelenmiş sorulara verilen cevaplarda ortaya çıkmıştır. Burada daha önce de zikredildiği gibi sezgisel düşünenlerin kesin kayıp seçeneğini tercih edecekleri çünkü çerçeveleme etkisinde kalacakları düşünülse de; Z Kuşağı için bu durum geçerli olmamış, sezgisel düşünen öğrenciler beklenenin aksine çerçevelemenin etkisinde kalmayarak riskli kayıp seçeneğini tercih etikleri görülmüştür. Benzer şekilde analitik düşünenler ise varsayılanın tersine negatif çerçevelenmiş soruda çerçevelemenin etkisinde kalmışlar ve kesin kayıp tercihi yapmışlardır. Yani genel manada; Z Kuşağı pozitif çerçevelenmiş sorulara önceki çalışmalara benzer şekilde cevaplar vermişse de negatif çerçevelenmiş sorularda durum öncekilerin tam aksi yönde olmuştur. Yapılan analizler sonucunda da öğrencilerin düşünce sistemleri ile risk tercihleri arasında bir ilişki olmadığı tespit edilmiştir.

Çalışmadan elde edilen diğer bir sonuç ise; öğrencilerin cinsiyet, kardeş sayısı, ebeveyn öğrenim durumu ve aile ortalama geliri ile düşünce sistemi arasında herhangi bir ilişki kurulamazken okul değişkeni ile düşünce sistemi arasında pozitif bir ilişki bulunmaktadır. Yani, öğrenim görülen okul CRT soruların doğru cevaplanmasında etkili olmuştur.

Cinsiyetlere göre risk tercihlerindeki farklılaşma incelendiğinde ise, kız öğrencilerin erkek öğrencilere göre riskli seçenekleri tercih ederken çekingen davrandıkları görülmüş, bu bulgu Nofsinger (2014) tarafından ortaya konulan, kadınların yatırım tercihleri yaparken erkeklere oranla daha çekimser davrandıkları yönündeki tezini akla getirmektedir.

Son olarak okul, kardeş sayısı, ebeveyn öğrenim durumu ve aile ortalama geliri gibi değişkenlerin çerçeveleme ve risk tercihlerinde net bir etkisinin olmadığı görülmüştür.

Kaynakça

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