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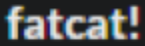






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The Volatility Relationship Among Financial Assets: TVP-VAR Model

Finansal Varlıklar Arasındaki Volatilité İlişkisi: TVP-VAR Modeli

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ABSTRACT

Keywords:

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In the post-pandemic period, intense fluctuations in interest rates, inflation, and prices were observed in many countries around the world. This study was conducted to analyze the dynamic interconnectedness between financial assets during this turbulent period. The study was conducted using TVP-VAR analysis on daily data of one-month deposit interest rate, BIST100 index return, two-year bond interest rate, USDTRY exchange rate, gold ounce price and CDS premiums between 2018 and 2023. The results of the study show that the interaction between variables reached a very high level especially in the post-pandemic period and then decreased over the years. On the other hand, the BIST100 index, gold and CDS premium are net shock emitters, while deposits, USDTRY and bonds are net shock receivers. It is aimed that the results obtained will enable investors to choose the right investment instrument in today's financial markets where prices, returns, and rates fluctuate, and on the other hand, it is aimed to benefit firms and policymakers in terms of macro problems in the current geography.

ÖZET

Anahtar Kelimeler:

Finans,

Oynaklık,

TVP-VAR

Jel Kodları:

D53, F65

Pandemi sonrası dönemde birçok dünya ülkesinde faiz, enflasyon ve fiyatlarda yoğun dalgalanmalar görülmüştür. Bu çalışma yaşanan bu çalkantılı dönemde finansal varlıklar arasındaki dinamik bağlantılılığın analizi amacıyla gerçekleştirilmiştir. Çalışma 2018-2023 yılları arasındaki bir aylık mevduat faiz oranı, BİST100 endeksi getirisi, iki yıl vadeli tahvil faiz oranı, USDTRY kuru, altın ons fiyatı ve CDS primlerinin günlük verileri üzerinden TVP-VAR analizi kullanılarak gerçekleştirilmiştir. Çalışma sonuçları özellikle pandemi sonrası dönemde değişkenler arasındaki etkileşimin çok yüksek bir seviyeye çıktığını daha sonra yıllar itibariyle azaldığını göstermektedir. Diğer taraftan BİST100 endeksi, altın ve CDS priminin net şok yayıcı varlıklar olurken mevduat, USDTRY ve tahvil değişkenlerinin ise net şok alıcı değişkenler olduğu tespit edilmiştir. Elde edilen sonuçların fiyat, getiri ve oranların dalgalı bir görünüm sergilediği günümüz finansal piyasalarında özellikle yatırımcıların doğru yatırım aracını seçmesine imkan vermesi ve diğer taraftan bulunan coğrafyadaki makro problemler açısından firmalara ve politika yapıcılara fayda sağlaması amaçlanmaktadır.

1. INTRODUCTION

The concept of volatility refers to the interaction of volatility in one country's markets with volatility in another country's markets (Dornbusch et al., 2000). The need for theoretical and empirical knowledge on volatility is increasing given the continuous development of new and more complex financial instruments that have entered the market as a result of the rapid growth in financial markets (McAleer & Medeiros, 2008:10).

Understanding how volatility occurs and measuring its effects are important to contribute to the functionality of financial markets and to ensure investor confidence. Investors may have problems with their confidence in the market in case of sudden fluctuations in assets, and this may lead to a slowdown in capital flows to the market (Daly, 2008: 2378).

Volatility spillovers generally show their effects in financial markets and, depending on the strength of the resulting effect, are expressed as a guide for investors to make decisions and determine policies. While the policies determined create some results at the point of interaction of states at the macro level, they also show some effects on individuals and institutions (Değirmenci, 2017: 162-163).

The intense mobility of capital in today's economic life has enabled investors to invest anywhere in the world. In addition, as a result of the penetration of information technologies into every aspect of life every day, transaction volumes in financial markets have increased (Şenol & Türkay, 2020: 362).

In this study, we analyze the volatility among financial assets in Turkey by using the TVP-VAR model introduced to the literature by Diebold & Yılmaz (2009) and developed by Antonakakis et al. (2019). The data of the study includes daily data of the variables determined between 2018-2023¹. The variables used in the study are the 1-month deposit interest rate, 2-year benchmark bond interest rate, USDTRY exchange rate, BIST100 index return, gold ounce return, and CDS premium.

The criteria preferred in the study are expected to enable investors to choose the right investment instrument due to the recent intense price fluctuations, high interest rates, and high inflation figures. This study is very important in terms of monitoring the impact of assets on each other, especially in times of crisis in the financial sector. In addition, it is also aimed to provide guidance on how investors should follow a path in their investment decisions. In today's financial life, individuals and businesses desire to know how financial assets move to make the best investment decision due to reasons such as high capital mobility and increasing competition.

Recently, the number of investors in financial markets, especially in the stock market, has increased in parallel with the returns and the number of firms traded. Official statistics published by TurkStat² indicate that the BIST100 index is the investment instrument that provides the highest return with 65% (Turkish Statistical Institute). Investors' preference for instruments with high returns has caused the BIST100 index to spread volatility over other investment instruments.

Especially in developing economies such as Turkey, it is important to analyze the relationship between financial assets and each other in order for investments to support the economic and social development of the country. The study conducted for this purpose offers an original content for the reader in terms of the variables used and the analysis period, although the TVP-VAR method has been widely preferred in the literature in recent years.

The study consists of five sections: introduction where basic information is presented, literature including previous studies, methodology where the proposed method is applied, findings including the results of the study, conclusion, and evaluation.

2. LITERATURE REVIEW

Although there are few studies in the domestic literature to analyze the volatility among assets in financial markets, there has been an increasing trend in recent years. In international studies, stock market, oil prices, CDS premium, exchange rates and different country indices are generally preferred. On the other hand, studies conducted in Turkey generally use deposit interest rates, bond interest rates, gold prices, foreign exchange rates and BIST indices. Table 1 below presents some studies from the domestic and foreign literature using the TVP-VAR method.

¹ Until the data on 10.23.2023.

² Turkish Statistical Institute

Table 1. Literature Review

Author(s)	Study period and variables	Study results
Jebabli et al. (2014)	The study was conducted to measure the effects of shocks in world stock markets and oil prices on food prices during the 2008 global financial crisis. Crude oil, MSCI (Morgan Stanley Capital International) and food products such as maize, banana, beef, fish and lamb were used as variables.	The study finds that shocks from crude oil and MSCI variables are transmitted to food products. It was stated that volatility reached higher levels in periods when the effects of the crisis increased.
He et al. (2018)	The study was conducted to analyse the relationship between the Chinese housing market and bank loans in the period 2005-2017.	According to the findings of the study, there is a time-varying relationship between house prices and bank loans, and this relationship between the two variables differs on the demand and supply side. In particular, the effect of house prices on bank loans is found to be higher.
Liu et al. (2019)	The study was conducted to analyze the volatility of the Chinese stock market on other global stock markets. The data of 28 different stock markets such as Shanghai Composite Index (China), AEX (Netherlands), All Ordinaries (Australia), Bell20 Index (Belgium), Bovespa (Brazil), CAC40 (France), DAX (Germany), Dow Jones Industrial Average (USA), FTSE100 (UK), Hang Seng (Hong Kong), IBEX35 (Spain) were used in the study.	According to the results of the study, it is stated that TVP models produce more accurate results than other models in analyzing the relationship between stock markets and the Chinese stock market has a higher impact on other stock markets.
Dahir et al. (2020)	The study was conducted to investigate the volatility between Bitcoin and the stock market in BRICS countries (Brazil, Russia, India, China and South Africa) during the period 2012-2018.	The results of the study show that Bitcoin does not have a significant impact on the stock markets of the BRICS countries, but the stock markets of these countries spread volatility to Bitcoin.
Zhou et al. (2020)	The study was conducted to analyze the effects of the geopolitical risk variable (GPR) on the returns of rare metals in China.	The results show that the effects of the GPRs variable on stock returns of rare metals were positive before 2012 and negative in the following years, and the results suggest that China should take hedging-oriented measures for these markets.
Adekoya & Oliyide (2021)	The study was conducted to analyze how the COVID-19 pandemic has affected the connectivity between financial markets and commodities. For this purpose, gold, stock market, USDEUR, Bitcoin and oil prices are used as variables.	The results of the study reveal that gold and the dollar are net recipients of shocks, while the other variables stock market, Bitcoin and oil are net shock propagators. It also showed that the COVID-19 pandemic was largely responsible for the risk transmission between financial markets and commodities.
Asl et al. (2021)	The study was conducted to analyze the volatility spreads between the cryptocurrencies Bitcoin, Ethereum and Stellar in the period 2018-2021.	According to the findings obtained as a result of the analyzes, it is determined that the negative volatility in the cryptocurrency market is higher and Ethereum is the most shock-emitting variable. On the other hand, while Bitcoin is a shock-spreader in the early periods, it exhibits a shock-receiver outlook in the later periods.
Zhang et al. (2021)	The study was conducted to analyze the volatility between the US stock market and the risk of a Chinese stock market crash. The study period covers the period from 2000 to 2019 and Shanghai Composite Index, CSI 300 Index, return of S&P 500 index (SPR) and Dow Jones industrial average (DJIA) are used as variables.	The results show that the effects between US stock volatility and the risk of a Chinese stock market crash are increasing, and the depreciation of the domestic currency further increases the risk of a stock market crash.
Akyıldırım et al. (2022)	The study was conducted to analyze the dynamic interconnectedness among assets in the Turkish	The results of the study show that the level of dynamic interconnectedness between

	<p>financial markets. The study period is 2008-2021 and the variables of deposit rate, BIST100 index, USDTRY exchange rate, bonds, commodities, CDS premium are used.</p>	<p>assets increases during periods of stress in the analyzed period. In addition, it is stated that the exchange rate and the CDS premium are shock emitters while the deposit rate, bond and commodity markets are shock absorbers. The BIST100 index, on the other hand, exhibits both shock-receiving and shock-spreading characteristics over time.</p>
<p>Ari (2022)</p>	<p>The study was conducted to analyze the impact of the Russia-Ukraine war on global markets. The study analyzed data from 2018-2022 and included 20 different stock market indices such as Dow Jones Industrial Average (USA), Shanghai Composite (CHN), EuroNext 100 (EUR), Nikkei 225 (JPN), United Kingdom 100 (GBR), DAX Index (DEU), MOEX Russia (RUS).</p>	<p>The results of the study show that the total interconnectedness was 79.91% in the first case when Russia was included and 81.44% in the second case, and that there was a fluctuation from Western markets to Eastern markets. It was also stated that the war affected all markets except the Chinese stock market.</p>
<p>Cao & Xie (2022)</p>	<p>The study was conducted to analyze the dynamic interconnectedness between the cryptocurrency market and the financial market. In this context, Bitcoin, Ethereum and Ripple, which are cryptocurrencies, and China's foreign exchange, commodity and foreign exchange market are preferred as variables.</p>	<p>The results of the study show that there is a negative volatility among assets in general and that cryptocurrencies have a similar impact on Chinese markets, but have a greater impact on commodity and exchange rate markets. In addition, Bitcoin and Ripple have positive volatility spillovers while Ethereum has a negative volatility spillover.</p>
<p>Chatziantoniou et al. (2022)</p>	<p>The study was conducted to analyze the volatility between crude oil and stock markets of G7 countries. American S&P500, Canadian S&P/TSX, British FTSE100, German DAX30, French CAC40, Italian FTSE MIB and Japanese Nikkei225 variables were included in the study for the period 2007-2021.</p>	<p>The results show that crude oil was a net shock emitter during the 2014 price collapse, but became a net shock absorber around 2018. It is also stated that during the Brexit period, the UK stock market became a net shock-spreader and the stock markets of Germany, Italy and Japan became net shock takers.</p>
<p>Akkuş & Doğan (2023)</p>	<p>The study was conducted to analyze the dynamic link between cryptocurrency, NFT (Non-fungible token), and DeFi (Decentralized finance). Bitcoin and Ethereum from cryptocurrencies, Tezos and Sandbox from NFTs, Chainlink and Uniswap from DeFi assets were preferred as variables in the study.</p>	<p>The results of the study revealed that Ethereum and Chainlink are volatility emitters while other variables are volatility takers. It was also stated that NFT assets emit less volatility than cryptocurrencies.</p>
<p>Erben Yavuz (2023)</p>	<p>The study was conducted to analyze the relationships between the clean energy index, sustainability, and BIST indices. For this purpose, S&P Global Clean Energy Index (GCE), Dow Jones Sustainability Index (DJSWI), and BIST Sustainability Index (BIST) variables between 2014 and 2023 were preferred in the study.</p>	<p>According to the results of the study, it was determined that the S&P Global Clean Energy Index, the Dow Jones Sustainability Index and the BIST Sustainability Index spread volatility to the BIST Sustainability Index, while the S&P Global Clean Energy Index spreads volatility to the Dow Jones Sustainability Index.</p>
<p>Gökgöz & Kayahan (2023)</p>	<p>The study was conducted to analyze the volatility between the Bitcoin cryptocurrency and the markets. The years 2017-2022 were selected as the study period and Bitcoin, MSCI (Morgan Stanley Capital International) US index, MSCI Europe index and MSCI emerging markets index were preferred as variables.</p>	<p>As a result of the study, it was determined that Bitcoin cryptocurrency has a structure that takes volatility from MSCI US and MSCI Europe variables and emits volatility against MSCI emerging economies. It is also stated that there is a weak link between Bitcoin and the markets.</p>
<p>Höl (2023)</p>	<p>The study was conducted to measure the volatility among financial assets in Turkey during the COVID-19 period. For this purpose, gold, Bitcoin, BIST100 index, dollar exchange rate and WTI (West Texas Intermediate) index</p>	<p>According to the results of the analysis, Bitcoin and gold are volatility emitting variables, while BIST100 index, dollar exchange rate and WTI crude oil prices are volatility receiving variables. It is also stated that the BIST100 index is the</p>

variables were preferred in the study between 2020-2022.

Huang et al. (2023)

In the study analyzing the volatility between energy assets and financial markets in the period between 2018-2022, WTI (West Texas Intermediate), natural gas market (NGS), gold, S&P500, US bond, US dollar and Bitcoin variables were preferred.

variable that emits the most volatility, while the same index is affected by gold, Bitcoin and dollar exchange rate variables.

As a result of the study, it is stated that the S&P500 index is a net shock emitter, followed by NGS, gold and USD. It is also stated that Bitcoin cryptocurrency is a net shock receiver.

Doğan et al. (2023)

The study analyzes the dynamic interconnectedness between BIST sustainability index, BIST100 index, S&P global clean energy index and S&P GSCI carbon emission allowances. The study period is 2014-2022.

As a result of the study, it is determined that the carbon emission variable spreads volatility to the S&P GCEI, BIST 100 and BIST sustainability indices, but this volatility decreased significantly during the COVID-19 period. It is also observed that there is a weak volatility from the S&P GCEI index to the BIST sustainability index and the BIST 100 index.

3. METHODOLOGY

3.1. Data

The study was conducted to analyze the dynamic interconnectedness between variables that have the ability to affect Turkey’s financial markets. While determining these variables, deposits, foreign currency, gold, stocks, bonds and gold, which are among the most preferred investment instruments, were included in the study, and the changes in CDS premiums over the years were also included in the study to analyze the extent of interaction. While selecting the deposit variable, the most preferred maturities of savers were taken as 1-month maturities by examining the official reports of the Banks Association of Turkey. The USD/TL exchange rate was chosen as the currency type and gold as the commodity. In addition, the BIST100 index (Borsa Istanbul), which has recently reached 8 million investors, has been added to the study as it is the new preference of investors. In addition, bonds with a maturity of 2 years are also included in the study as a different variable. The data used were obtained from the Central Bank, the Banks Association of Turkey and Investing statistics. Graphs of the level values of the variables included in the study are presented in Figure 1 below.

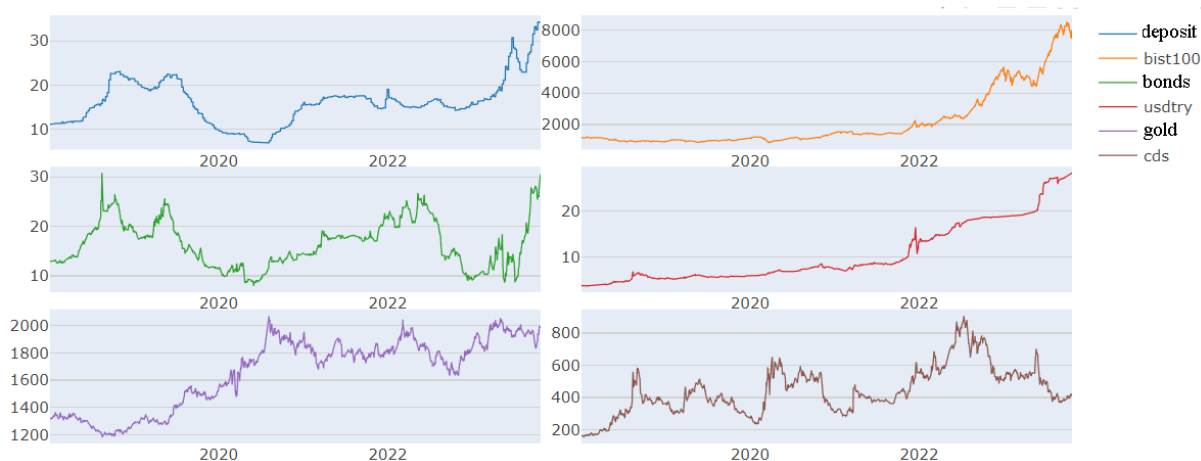


Figure 1. Time Path Indicators for Variables

When the values presented in Figure 1 are analyzed, it is seen that 1-month term bank deposit rates, which were slightly above 10% in early 2018, approached 40% as of October 2023 and experienced a sudden increase as of December 2021, when the decision on currency-protected deposits was taken; the number of investors in the BIST100 index reached approximately 8.5 million people in the last two years and many enterprises started to be traded on the stock exchange. 1.121 levels, the index reached 8 thousand levels as of October 2023 and moved downwards due to the recent Israeli-Palestinian tension, 2-year bond interest rates followed a highly fluctuating course as of the periods analyzed, but hovered slightly above 30 points as of October 2023. While the USDTRY exchange rate was 3.7 at the beginning of 2018, it decreased from 16 to 11 levels in one day with the announcement of the currency-protected deposit system in December 2020, but then rose to 28 levels due to the negative

developments in the markets. 300 \$ at the beginning of 2018 and reached approximately 2.000 \$ as of October 2023. It is observed from the graphs that there have been increases in the returns of all investment instruments as of the analyzed period. In addition, while the Credit Default Swap variable, which is expressed as the CDS premium, was at 163 levels in early 2018, it reached its highest level in the July 2020 period and exceeded 900 points and declined to 400 levels as of October 2023.

3.2. Method

In this study, the vector autoregression model (Time Varying Parameter- TVP-VAR) model developed by Antonakakis et al. (2019) was used to determine the interconnectedness between variables. The TVP-VAR model has advantages over other nonlinear models in that it does not require a transition variable, time-varying parameters can detect gradual changes between variables, and the time-varying variance-covariance matrix of the error terms takes into account the effect of sudden exogenous shocks (Koop et al., 2009; Caporale et al., 2021:7).

The implementation stages of the TVP-VAR model can be expressed as follows (Antonakakis et al., 2020).

$$x_t = B_t z_{t-1} + u_t \quad u_t \sim N(0, S_t) \quad (1)$$

$$vec(B_t) = vec(B_{t-1}) + v_t, \quad v_t \sim N(0, R_t) \quad (2)$$

Here, x_t , x_{t-1} and u_t are $N \times 1$ dimensional vectors. B_t and S_t are $N \times N$ dimensional matrices. Time-varying coefficients and error covariances have been developed by Koop et al. (1996); Pesaran & Shin (1998); Diebold & Yilmaz (2014) to estimate the generalized connectedness procedure. The following formula is applied to perform this estimation.

$$C_t(H) = \frac{\sum_{i,j=1, i \neq j}^m \tilde{\Phi}_{ij,t}(H)}{\sum_{i,j=1}^m \tilde{\Phi}_{ij,t}(H)} * 100 \quad (3)$$

$$= \frac{\sum_{i,j=1, i \neq j}^m \tilde{\Phi}_{ij,t}(H)}{m} * 100 \quad (4)$$

This approach to interconnectedness shows how a shock to one variable propagates to other variables. We first look at the case where variable i transmits its shock to all other variables j . This is called total directional interconnectedness and is expressed as follows;

$$C_{i \rightarrow j,t}(H) = \frac{\sum_{i,j=1, i \neq j}^m \tilde{\Phi}_{ji,t}(H)}{\sum_{i=1}^m \tilde{\Phi}_{ij,t}(H)} * 100 \quad (5)$$

Finally, we subtract the total directional connectedness to others from the total directional connectedness from others to obtain the net total directional connectedness, which can be interpreted as the effect of variable i on the analyzed network.

$$C_{i,t} = C_{i \rightarrow j,t}(H) - C_{i \leftarrow j,t}(H) \quad (6)$$

If $C_{i,t}$ is positive, it means that variable i affects the network more than the network itself. Conversely, if the value $C_{i,t}$ is negative, it means that variable i is directed by the network.

Finally, we compute net pairwise connectedness, further reducing net total directional connectedness to examine pairwise relationships,

$$NPDC_{ij}(H) = \left(\tilde{\Phi}_{jit}(H) - \tilde{\Phi}_{ijt}(H) \right) * 100 \quad (7)$$

If $NPDC_{ij}(H) > 0$ ($NPDC_{ij}(H) < 0$) means that variable i dominates variable j .

4. FINDINGS

In this part of the study, the TVP-VAR model was used and the results are presented in tables and graphs below. Figure 2 presents the volatility series of the variables. When the results in the graph are analyzed, changes in all variables are clearly visible.

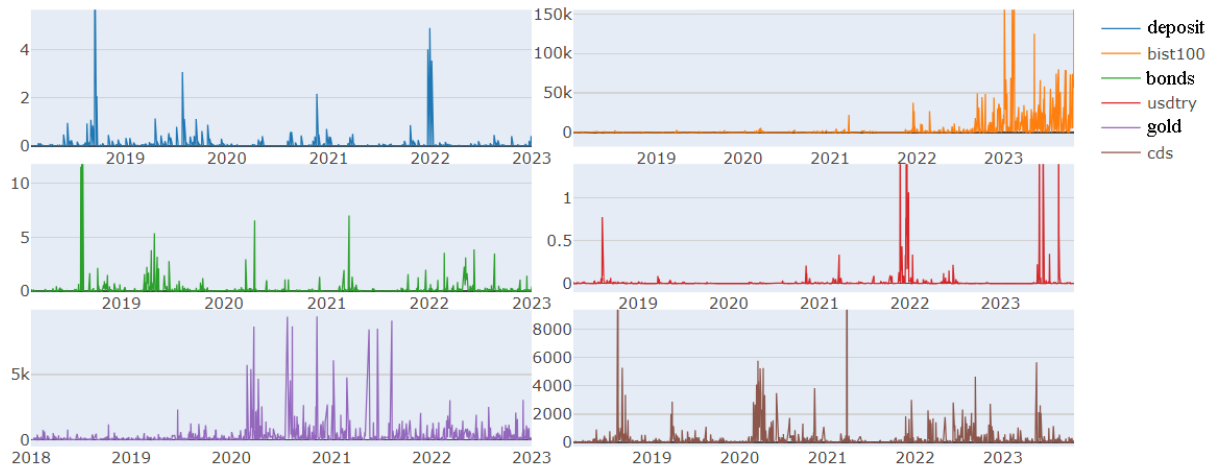


Figure 2. Series of Variables

Table 2. shows the descriptive statistics of volatility series. According to the Jarque-Bera test results, the variables are not normally distributed. According to the ADF test results, all variables are stationary at level 1. Q and Q2 test statistics contain autocorrelation at various levels. The autocorrelation of the series indicates that it is appropriate to use the TVP-VAR model.

Table 2. Descriptive Statistics of Variables

	Deposit	Bist100	Bonds	USDTRY	Gold	CDS
Mean	0.1	4.057.177	0.291	0.026	302.753	253.446
Variance	0.455	263.886.517.881	3.139	0.068	722.246.435	880.996.212
Skewness	11.299*** (0.000)	9.787*** (0.000)	19.108*** (0.000)	26.123*** (0.000)	7.021*** (0.000)	14.113*** (0.000)
Ex. Kurtosis	150.653*** (0.000)	140.374*** (0.000)	446.228*** (0.000)	809.419*** (0.000)	61.024*** (0.000)	286.969*** (0.000)
JB	1323768.*** (0.000)	1145858.*** (0.000)	11441408.*** (0.000)	37527102.*** (0.000)	223664.*** (0.000)	4742912.*** (0.000)
ERS	-11.566 (0.000)	-3.925 (0.000)	-13.663 (0.000)	-12.434 (0.000)	-10.723 (0.000)	-11.536 (0.000)
ADF	-3.434952***	-3.434998***	-3.434924***	-3.434920***	-3.434920***	-3.434920***
Q(10)	94.877*** (0.000)	436.101*** (0.000)	87.081*** (0.000)	117.871*** (0.000)	71.221*** (0.000)	105.016*** (0.000)
Q2(10)	40.635*** (0.000)	29.185*** (0.000)	4.080 (0.652)	0.966 (0.994)	18.641*** (0.001)	0.588 (0.999)

(*) denotes significance at 10%; (**) denotes significance at 5%; (***) denotes significance at 1%.

Table 3 presents the average dynamic interconnectedness table, which shows how much of the volatility between variables is caused by itself and how much by other variables as a result of the TVP-VAR analysis.

Table 3. Average Dynamic Connectedness Table

	Deposit	BIST100	Bonds	USDTRY	Gold	CDS	Volatility Spill-over (FROM)
Deposit	61.51	15.48	10.13	5.46	4.39	3.04	38.49
BIST100	5.66	59.66	13.16	7.01	10.4	4.12	40.34
Bonds	6.5	17.83	46.84	7.73	4.36	16.73	53.16
USDTRY	5.18	17.64	12.11	52.09	5.5	7.48	47.91
Gold	2.26	11.92	3.38	5.1	73.79	3.55	26.21
CDS	2.97	9.63	8.48	6	6.65	66.28	33.72
Volatility Spill-over (TO)	22.56	72.51	47.26	31.29	31.29	34.92	239.83
NET	-15.93	32.17	-5.9	-16.61	5.08	1.2	47.97

The results presented in Table 2 show the levels at which the variables are affected by each other. Volatility Spill-over (TO) indicates how the variables on the vertical axis affect the variables on the horizontal axis. Volatility Spill-over (FROM) shows how the variables on the horizontal axis are affected by other variables on the vertical axis. The explanation of this effect between the variables obtained as a result of the analysis is expressed below.

According to Table 2, the variables most affected by other variables were bonds with 53.16%, USDTRY with 47.91%, BIST100 with 40.34%, deposits with 38.49% and gold with 26.21%. The variables that affect other variables the most are BIST100 with 72.51%, bonds with 47.26%, gold and USDTRY with 31.29% and deposits with 22.56%.

BIST100 with 32.17%, gold with 5.08% and CDS with 1.2% are volatility-spreading variables, while deposits with -15.93%, deposits with -5.9% and USDTRY with -16.61% are volatility-receiving variables. The total dynamic interconnectedness level between the volatility spillovers of the variables is 47.97%, which means that these variables can be included in the same portfolio. Figure 3 illustrates the total level of dynamic interconnectedness between variables.

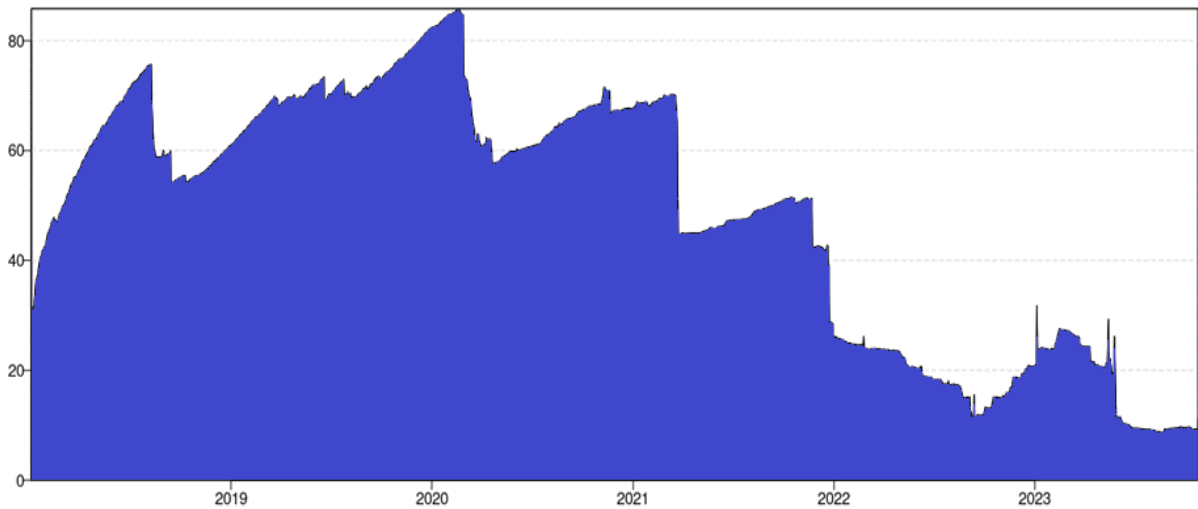


Figure 3. Total Dynamic Connectedness Relationship

When examined, the levels of interconnectedness between the variances of the variables remained quite high and although there was a downward trend in the second half of 2018, it reached its highest correlation level of 82.36 on February 3, 2020 with the emergence of the COVID-19 pandemic. Although a fluctuating course was observed in the following years, it is seen that it has reached its lowest levels as of October 2023.

When the information presented in Figure 4 is analyzed, the parts above the zero point indicate the periods when the relevant variable was a net shock emitter, while the parts below the axis indicate the periods when the variable was a net shock receiver.

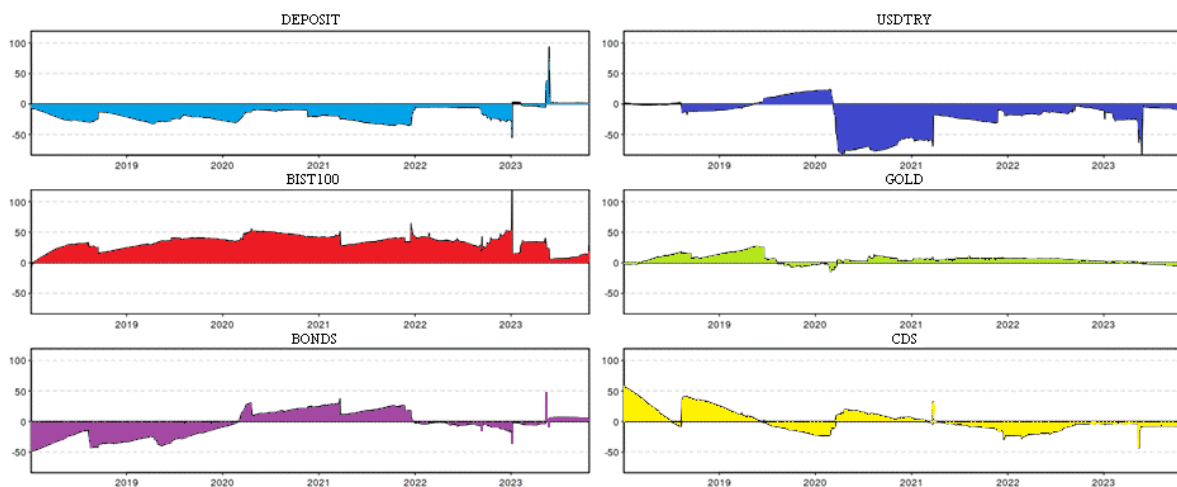


Figure 4. Net Volatility Indices

When the variables in Figure 4 are analyzed, it is seen that the deposit variable is a volatility absorbing variable until the last quarter of 2023, the USDTRY variable is a volatility absorbing variable although it shows changes in general, the BIST100 variable is a volatility emitting variable throughout the entire study period, and the Gold variable is a volatility emitting variable in general, It can be stated that the bond variable was a volatile variable until 2020, became a volatility-emitting variable as of 2020 and then followed a volatile outlook, and finally, the CDS variable had a volatility-emitting outlook until mid-2019, a volatility-emitting outlook from this date until April 2020, a volatility-emitting outlook until March 2021 and a volatility-emitting outlook in the following time period.

Figures 5 and 6 illustrate the movements of the bilateral diffusion indices of the variables. According to the information given in the graphs, in the relationship between deposits and the BIST100 index, it is observed that the BIST100 variable has a net shock-spreading structure and maintained this situation throughout the study period. In terms of deposits and CDS variables, it is determined that there is no spillover. When the spillovers between deposits and bonds are analyzed, it is observed that bonds have a net shock-spreading structure in almost all periods.

When the bilateral diffusion between BIST100 and bonds is analyzed, it is seen that the BIST100 variable is the net shock-spreading variable. In the diffusion graph between deposits and USDTRY, it is seen that the USDTRY variable was the net shock-spreading variable until the first quarter of 2020 and in the following periods, the situation reversed and the deposit variable became the net shock-spreading variable. When the bilateral diffusion graph of BIST100 and USDTRY variables is analyzed, it is determined that the USDTRY variable is a net shock propagator in all periods.

When the graphs of deposits and gold variables are analyzed, it is seen that the gold variable is the net shock emitter, albeit to a lesser extent, but the relationship is limited. Although there is a limited relationship between BIST100 and gold, it is observed that the BIST100 variable is a net shock emitter.

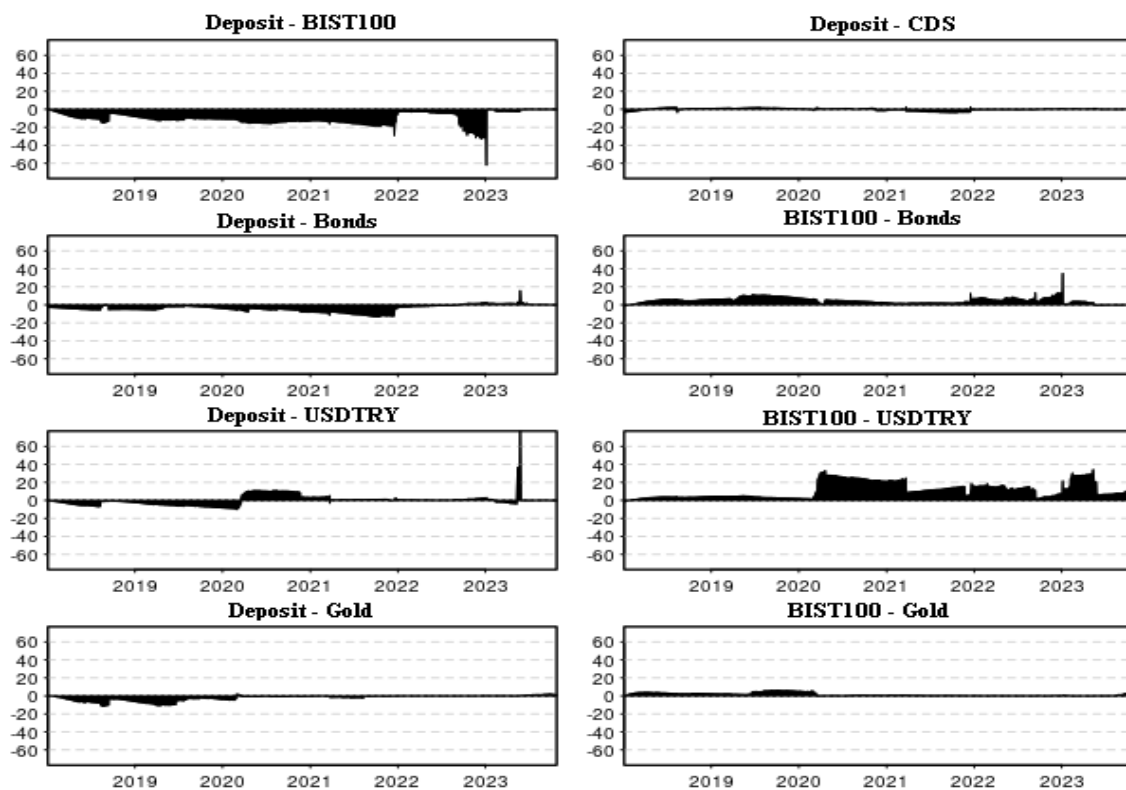


Figure 5. Net Bilateral Diffusion Indices among Variables

When the bilateral diffusion results given in Figure 6 are analyzed, it is seen that in the relationship between BIST100 and CDS, the BIST100 variable is the net shock-spreader in all periods. When the bilateral net spillovers between bond and USDTRY variables are analyzed, it is observed that the bond variable is the net shock-spreader in all periods. Looking at the results of the USDTRY and CDS bilateral diffusion graph, it is seen that while the USDTRY variable was the net shock emitter until the first quarter of 2020, the opposite situation emerged after this date.

When the results of gold and CDS bilateral diffusion are analyzed, it is generally determined that the gold variable is the net shock emitter. Finally, when the relationship between bonds and CDS is analyzed, it is seen that the CDS variable was the net shock emitter in 2018 and 2019, while the relationship between the variables weakened in the following periods, but the bond variable was the net shock emitter.

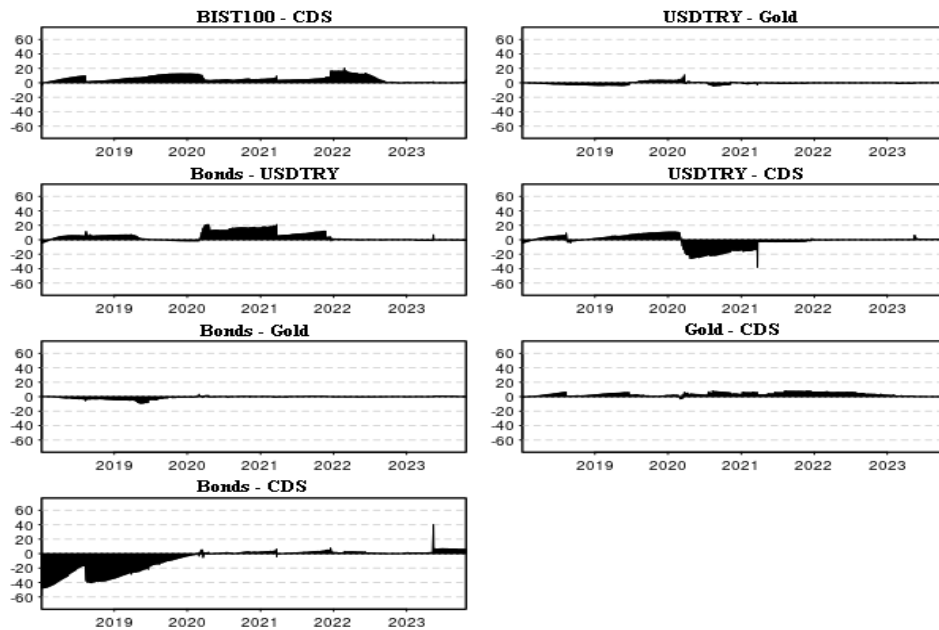


Figure 6. Net Bilateral Spillover Indices among Variables -2

The results presented in Figure 5 are constructed to express the strength and direction of the volatility spillovers of the variables. According to the figure, variables in yellow are volatility-receiving variables and variables in blue are volatility-spreading variables.

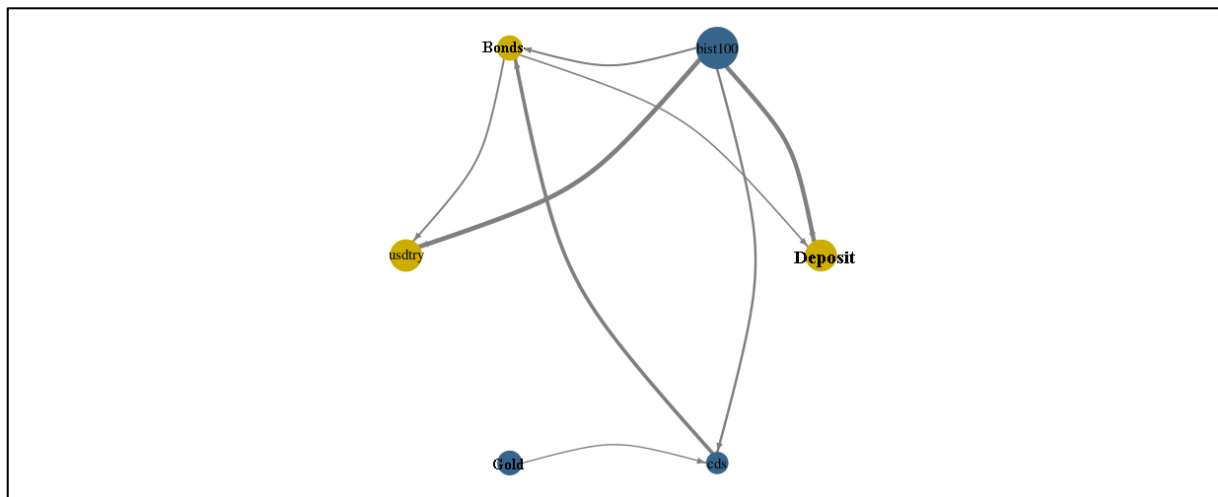


Figure 7. Network Plot of Volatility Spillover of Variables

The area covered by the variables indicates the strength of the spillover, and in this respect, it can be stated that the BIST100, gold and CDS variables are the variables that emit the highest volatility, and the deposit, USDTRY and bond variables are the variables that receive the highest volatility, respectively. The arrows between the variables indicate the direction of the influence relationship and the thickness of the arrows indicates the intensity of the relationship. According to the graph, it can be stated that the CDS variable has a stronger effect on bonds than on deposits and BIST100, the BIST100 variable has a stronger effect on deposits than on bonds, and the BIST100 variable has a stronger effect on USDTRY than on bonds.

When the results of the study are compared with the results of the study conducted by Akyıldırım et al. (2022), it is seen that the CDS variable continues to be a variable that emits volatility, but its impact power has weakened.

Höl (2023) has produced a similar result with the gold variable being a shock emitter and the USDTRY variable being a shock receiver, but a different result with the results of the BIST100 variable analysis.

When the results of the study are compared with previous studies, it is seen that there are different results especially for the BIST100 variable. It can be stated that the reason for this situation is the rapid increase in the number of investors and traded firms in the stock exchange in recent years. The rapid increase in the stock market index has led to a decrease in the demand for other investment instruments and resulted in an increase in the effect of the stock market on other variables.

5. CONCLUSION

Thanks to the new inventions of information technologies that make life easier every day, humanity has advanced in many areas compared to the past. Especially in today's financial life, competition has become more intense, capital has gained unlimited mobility and consumer preferences are constantly changing. In order to ensure the sustainability of economic growth, institutions are constantly updating their policies and individual investors resort to various measures to minimize risk.

While investors in the Turkish financial market preferred gold and foreign exchange as the main investment instruments in previous years, the fact that approximately 10% of the country's population trades in Borsa Istanbul today can be stated as the biggest example of the change in investment habits (Official Statistics of Central Securities Depository & Trade Repository of Türkiye).

The rapid growth of the BIST index in recent years has been one of the main factors attracting investors' attention. In addition, the UST/TL exchange rate, which has been rising continuously since December 2021, is seen as an important investment instrument. The relationship between investment instruments and their possible effects on each other is also very important when making investments.

In particular, this study aims to investigate the possible effects of these investment instruments on each other and the strength and direction of this effect, if any. The Covid-19 pandemic, especially in recent years, has shown how much risk factors have penetrated into our lives, thus showing once again that investors should act more carefully.

For this study, which aims to analyze the relationship between investment instruments, a daily data set including 1-month deposit interest rate, BIST100 index, 2-year bond interest rate, USDTRY exchange rate, gold ounce price and CDS variables for the period 01.02.2018-10.25.2023 was obtained from Borsa Istanbul, investing platform, CBRT (Central Bank of the Republic of Turkey), TSI (Turkish Statistical Institute), BAT (Banks Association of Turkey) statistics. This data set was analyzed by using TVP-VAR (Time-Varying Parameter) analysis to analyze the spread of investment instruments on each other.

According to the results of the dynamic interconnectedness table obtained through the analyses, the variable that affects other investment instruments the most is the BIST100 index with 72.51%. On the other hand, the variable most affected by other variables was bonded with 53.16%. The 47.97% dynamic interconnectedness level between all variables included in the analysis suggests that these variables can be included in the same portfolio basket.

The results obtained may vary in different periods due to factors such as exchange rate fluctuations in the markets, increase in the number of investors and general economic conditions in the country. In this respect, a different result can be obtained by comparing the period before and after the COVID-19 pandemic period experienced in recent years. In addition, a different perspective can be reached by comparing international and domestic markets in terms of volatility.

5.1. Limitations of the Study

This study, which investigates the volatility among financial assets, has some limitations. First of all, the results of the study are interpretable for the years 2018-2023. It should also be kept in mind that the results may vary when the analysis methods are changed. On the other hand, the recent sudden fluctuations in the Turkish financial markets, the fact that the pandemic effect is still passing, the Russian-Ukrainian war and the ongoing war environment in the Middle East may show differences in terms of the results of the study. In future studies, different results can be obtained by choosing a different analysis period.

5.2. Implications of the Study

The results of the study provide important insights for both policymakers and investors. In particular, the recent sudden fluctuations in the markets and high inflation figures have shown that many people have turned to

investment to protect their assets or to gain from rising asset prices. In this environment, policymakers need to provide a healthier environment by cleansing the markets from speculative and manipulative actions to protect investors' assets, and at the same time, they should take the necessary initiatives to ensure that investors can make informed transactions in these periods when the number of investors is increasing. For investors, the findings of the study show that bonds, foreign exchange and deposit assets are more volatile variables while the stock market is a volatility-emitting variable, which provides important information on asset selection while investing.

AUTHORS' DECLARATION

This paper complies with Research and Publication Ethics, has no conflict of interest to declare, and has received no financial support.

AUTHORS' CONTRIBUTIONS

All sections are written by the author.

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A Research on the Effect of Consumers' Demographic Characteristics on Their Financial Literacy Level

Tüketicilerin Demografik Özelliklerinin Finansal Okuryazarlık Düzeylerine Etkisi Üzerine Bir Araştırma

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ABSTRACT

Keywords:
Consumer,
Demographics,
Financial Literacy

Jel Codes:
G53, M31

As financial markets have evolved, complex financial products and services have emerged that are difficult to understand for uninformed consumers. The liberalization of the market with such complex products and services and the increasing need for financial information due to increased competition have led researchers to focus on measuring the effects of financial literacy on financial decisions. In this measurement, researchers draw attention to the fact that many factors can be effective on financial literacy. Demographics are one of these factors, and there are many indications of its impact on financial literacy. In this study, it was aimed to determine the effects of demographic characteristics of undergraduate and associate degree students continuing their education at Konya Technical University on their financial literacy levels. Demographic characteristics such as gender, age, education level, and income status were discussed. Convenience sampling method, which is one of the non-random sampling techniques, was used in the study. 362 questionnaires were included in the study. As a result, it has been determined that demographic characteristics are effective on financial literacy.

ÖZET

Anahtar Kelimeler:
Tüketici,
Demografik
Özellikler,
Finansal
Okuryazarlık

Jel Kodları:
G53, M31

Finansal piyasalar geliştikçe, yeterli bilgi düzeyine sahip olmayan tüketiciler için anlaşılması zor olan karmaşık finansal ürün ve hizmetler ortaya çıkmıştır. Piyasanın bu kadar karmaşık ürün ve hizmetlerle serbestleşmesi ve artan rekabet nedeniyle finansal bilgiye olan ihtiyacın artması, araştırmacıların finansal okuryazarlık düzeyinin finansal kararlar üzerindeki etkilerini ölçmeye odaklanmasını sağlamıştır. Bu ölçümde araştırmacılar birçok faktörün finansal okuryazarlık üzerinde etkili olabileceğine dikkat çekmektedir. Demografik özellikler bu faktörlerdendir ve finansal okuryazarlık üzerindeki etkisine dair birçok gösterge vardır. Bu çalışmada, Konya Teknik Üniversitesi'nde eğitimlerine devam eden lisans ve önlisans öğrencilerinin demografik özelliklerinin finansal okuryazarlık düzeylerine etkisinin belirlenmesi amaçlanmıştır. Demografik özelliklerden cinsiyet, yaş, eğitim durumu ve gelir durumu ele alınmıştır. Araştırmada tesadüfi olmayan örnekleme tekniklerinden biri olan kolayda örnekleme yöntemi kullanılmıştır. Araştırmaya 362 anket dahil edilmiş ve analizleri yapılmıştır. Analizlerde SPSS 25.0 programı kullanılmıştır. Sonuç olarak, demografik özelliklerin finansal okuryazarlık üzerinde etkili olduğu tespit edilmiştir.

1. INTRODUCTION

Although technology makes human life easier at the point reached today, it also makes it difficult. Because, the development of technology has increased the number of financial products which meet the economic needs of individuals best, on the other hand, it turned the use of such products into a complicated structure. The insufficient mention of the threats such as uncertainty and risk in those products, the efforts to convince the consumer as soon as possible by using marketing strategies, and the ambition of consumers to take advantage of the lack of information on these issues hinder the relationship between consumers and financial products. However, this problem can be solved by improving consumers' financial literacy levels. From definitions of financial literacy, an overarching explanation can be reached in the form of the ability of individuals to understand financial issues in daily life (Lusardi & Mitchell, 2007; Lusardi et al., 2010; Allgood & Walstad, 2013; Agarwalla et al., 2013; Doğan, 2016; Garg & Singh, 2018; Doğan, 2020; Kevser & Doğan, 2021).

Financial literacy enables potential consumers to earn more income and act more rationally in saving and borrowing (Lusardi, 2008). It plays a big role in making financial targets more real and planning more realistic (Jariwala & Sharma, 2011). In order to enjoy these advantages of financial literacy, however, the components that make finance and literacy meaningful must be brought together and consumers must be aware of these components. These components can be listed as information, financial attitude, financial behavior, etc. Information as a component has a greater prestige in financial literacy compared to other components. Because it plays both decision-making and a guiding role in the business of managing money. Therefore, consumers need financial information in their economic decisions. For that reason, a person who is qualified as financially literate must meet the basic level of financial knowledge proficiency (Remund, 2010). As a matter of fact, consumers, who are lost among the increasing number of financial product options, need to overcome this difficulty and make a rational decision by choosing the most appropriate financial product (Grohmann, 2018). Based on this critical importance, the importance of financial information for real and legal persons should be underlined.

The results of a survey conducted by the OECD in 2020 with the participation of Asian, European, and Latin American countries in financial literacy revealed that the financial literacy rates of these countries were 60% on average. This rate is a parameter that the level of financial knowledge of the participants in economic decisions is not very sufficient (OECD, 2020). The studies conducted on households using the survey method also show that a significant part of individuals cannot manage their financial situation and are not adequately prepared for retirement by not being cautious about the future (Niu et al., 2020). Huston (2010) argued that there is a need for a financial literacy measurement structure to correct this negative picture, such as improving the current level of financial literacy. In this regard, Lusardi & Mitchell (2011) drew attention to four main points to measure the financial literacy level such as the level of interest, simplicity, differentiation capacity, and briefness. Opletalova (2015) indexes this measurement according to the characteristics that should be present in the individual. These features are the idea that the individual should have about financial instruments, his level of knowledge about the management of the household budget, the ability to plan for expenditures and prudence.

The points mentioned related to financial literacy so far draw attention to the existence of many factors that can have an impact on financial literacy. There are many indications of the effect of demographic factors on financial literacy. Many studies (Van Rooij et al., 2011; Lusardi, 2012; Chen & Volpe, 2002; Lin et al., 2017) confirm that socio-demographic factors such as gender, age, education level, income status, marital status, title, parental influence, and entrepreneurial spirit, etc. are important factors on the financial literacy levels of individuals.

The aim of the study which was created in light of this information is to determine the effect of demographic factors on the financial literacy levels of consumers. For this purpose, demographic factors such as gender, age, education level, and income status were discussed. The research was conducted on university students due to their tendency towards financial products. In this respect, the study differs from other studies and contributes to the literature. 389 data which was collected with volunteer participants were evaluated and tested using the SPSS program with various statistical analyses. According to the research findings, it was found that demographic factors have an influence on the financial literacy levels of consumers.

The study continues with the literature section after the introductory section. In the literature section, the research on the subject has been discussed in a controversial way and hypotheses have been developed. In the chapter on Methodology, the purpose, importance, and method of the research are mentioned. Research questions were asked and information about data analysis was presented. As a result of these analyses, the findings section was formed. Finally, the effects and limitations of the study on the application were listed and suggestions and recommendations were made for further research in order to contribute to the literature.

2. LITERATURE REVIEW

Financial literacy can be defined as measuring how much an individual can understand and use information about personal finance (Huston, 2010). Because this information can sometimes be a very simple credit account, sometimes it can be an investment decision to be taken for the future. As it becomes functional in the academic literature, financial literacy is the knowledge of financial products (e.g., the definition of stock and bond, the difference between fixed and adjustable proportional mortgage), the knowledge of financial concepts (e.g., inflation, compound interest, and credit scores), having the mathematical or arithmetic skills needed to make effective financial decisions (Hasting et al., 2013). However, this deficiency is the most important obstacle to making financial decisions. In fact, most individuals are unaware of even basic financial concepts such as the operation of compound interest, the differences between nominal and real values, and the division of risk (Lusardi, 2007; Harputlu & Kendirli, 2019).

Not long ago, complex financial products and services emerged in financial markets that are difficult to understand, especially for investors who do not have sufficient financial knowledge (Van Rooij et al., 2011). The liberalization of the market with such complex products and services, and the increasing need for financial information due to increased competition, have enabled researchers to focus on measuring the effects of financial literacy on financial decisions.

The Global Financial Literacy Centre of Excellence (GFLEC) and the TIAA Institute have released the 2020 Personal Finance (P-Fin) Index, an annual survey in order to assess the knowledge and understanding which enables sound financial decision-making and effective management of personal finances, during the Covid-19 pandemic. Since financial fragility is strongly with financial literacy among specific demographics such as African-American groups and those with low incomes and many Americans are poorly equipped to deal with financial decisions, they prepared a link. Thanks to the link <https://gfec.org/education/financialresilience/>, they listed ten suggestions for managing money during this pandemic. In addition, the possibility of linking to government, non-profit organizations, and media articles has been introduced to help people in these turbulent times. These resources have helped users create a budget, learn how to build savings, track loans, manage debt, and use online technology to make financial decisions (Lusardi et al., 2020).

2.1. The Base of Hypothesis

The demographic factors which were included in this study and understood to have an impact on the level of financial literacy are; age, gender, education level, and income status.

Related to gender, Wagland (2009) made a comparison between men and women at the level of financial literacy. In conclusion, it was revealed that women's financial literacy levels were lower than men's. In addition, the study states that men are more cold-blooded in financial matters than women and prefer to take more risks in financial decisions. Beichar (2018) investigated the effect of financial literacy level on individuals' financial decisions. As a result of the research, it was found that gender was also associated with financial literacy along with other demographic factors. In their research designed to analyze the financial literacy of university students, Chen & Volpe (2002), revealed that the financial literacy levels of the 30 and younger age group, those with low work experience, and women were low. In their study which they conducted among Swedish adults who made plans for retirement and those who didn't, Almenbergh & Söderbergh (2011) found that the financial literacy levels of the elderly, women, and individuals with low education levels and income levels were low. Considering these studies which reveal the relationship between gender and financial literacy level, the H_1 hypothesis was developed as follows:

H₁: There is a significant relationship between gender and financial literacy level.

Another important demographic factor that affects the level of financial literacy is age. Mouna & Anis (2017) examined the factors affecting the financial literacy levels and stock acquisitions of Tunisian residents. Accordingly, significant relationships were found between financial literacy level and age, gender, education level, and income level. Beichar (2018); Almenbergh & Söderbergh (2011) suggested in their research that age is associated with financial literacy level along with other demographic factors. Accordingly, the hypothesis is formed as follows:

H₂: There is a significant relationship between age and financial literacy level.

Educational background is also significantly correlated with the level of financial literacy. Gramlich (2002) determined that the level of financial literacy can be improved through education and thus this level can be further increased. Hastings et al., (2013) established a relationship between financial literacy level and financial education

in their research. The findings that emerged as a result of this relationship pointed to a positive correlation between inadequate financial information and mistakes which were made in financial decisions. Ferguson (2002) has shown that financial literacy can be increased through financial education but also stressed that this will not completely eliminate financial problems. Based on the relationships in these researches, another hypothesis was developed as follows:

H₃: There is a significant relationship between education level and financial literacy level.

When the studies in which income status was associated with financial literacy level were analysed, De Bassa Scheresberg (2013) claimed that financial literacy levels were lower, especially in demographic segments such as low-income earners, women, and those with low levels of education. In a study conducted in Japan, it was found that the participants could not answer even simple financial questions correctly. It was concluded that a certain group of people including those with low-income earners among the demographic factors was not financially literate (Sekita, 2011). Beal & Delpachitra (2003) investigated the financial literacy levels of Austrian university students. The findings showed that the level of financial literacy and work experience and income status were significantly and positively related. The hypothesis H₄ developed in this direction is as follows:

H₄: There is a significant relationship between income status and financial literacy level.

3. MATERIALS AND METHOD

In this study, it was aimed to determine the effect of demographic characteristics of undergraduate and associate degree students who continue their education at Konya Technical University on their financial literacy levels. It is possible to reach various research in the literature related to the effect of demographic characteristics on the level of financial literacy. However, it is thought that the study will contribute to the relevant literature since the number of studies on university students is quite low. In this study, the survey technique which is one of the quantitative research methods was used. In order to get information about the level of financial literacy (OECD, 2015), the study of financial literacy measurement tool was used and the participants were also asked about their demographic characteristics. In the study, the answer was sought for the question “Do the demographics of consumers have an impact on their financial literacy?” In this direction, the relevant literature was reviewed and hypotheses were developed. The hypotheses which were developed can be listed as follows:

- H₁. There is a significant relationship between gender and financial literacy level.*
- H₂. There is a significant relationship between age and financial literacy level.*
- H₃. There is a significant relationship between educational status and financial literacy level.*
- H₄. There is a significant relationship between income status and financial literacy level.*

The research model designed according to the hypotheses developed is shown in Figure 1:

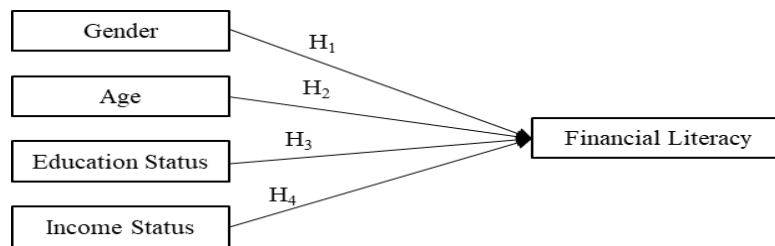


Figure 1. Research Model

In the study, the convenience sampling method which is one of the non-random sampling techniques was used. Between January 2022 and March 2022, a total of 389 surveys were collected from Konya Technical University through the Google survey form. 27 questionnaires were not included in the research because there were missing data. 362 questionnaires were included in the research and analysis was carried out. In the analysis, SPSS 25.0 for Windows (Statistical Package for Social Sciences), program was used. The reliability of the financial literacy level scales prepared according to the predetermined scale type was measured by Cronbach's Alpha Reliability coefficient. Cronbach's Alpha reliability values in the study were higher than 0.80 on all scales, indicating that the survey had an acceptable, good level of reliability (Cronbach, 1951; Baker, 1991; Polat et al., 2020; Alkara, 2021). The suitability of continuous variables to normal distribution was evaluated using the Shapiro-Wilk test.

As a result of the test, it was determined that the data came from the normal distribution family. The evaluation of the data in line with the parametric test conditions was analyzed by independent t-test. The relationship between continuous variables was tested by Pearson correlation analysis. As a result of the analysis, the degree, magnitude, and direction of the relationships between the variables were evaluated by Pearson correlation coefficient (r). While interpreting the results of the analysis, the error was kept at the level of 0.05 or 0.01, so that decisions were made at 95% and 99% confidence levels.

Information on sampling is available in Table 1. According to Table 1, it is noteworthy that there is a balanced distribution between men and women in the sample. 49.7% of the sample consisted of women while 50.3% of male participants. It was determined that 22.1% of the people in the study were younger than 18 years old, 25.4% were in the 18-20 age range and 52.5% were older than 20 years. In addition, it was determined that 66.3% of the sampling had an associate degree and 33.7% had a bachelor's degree. It was found that 38.7% of the individuals in the research had an income level of 2000 liras or less, while 41.4% had an income between 2001-2500 liras and 19.9% had an income of 2501 liras or higher. In the study where the findings of the financial literacy scale were investigated, some descriptive characteristics of the participants are shown as follows in Table 1, as explained:

Table 1. Demographic Characteristics of the Participants

	S	%
Gender		
Female	180	49.7
Male	182	50.3
Age		
Under 18 Years	80	22.1
Ages 18-20	92	25.4
Over 20 Years	190	52.5
Education Status		
Undergraduate	122	33.7
Associate Degree	240	66.3
Income Level		
2000 ₺ and Below	140	38.7
2001 – 2500 ₺	150	41.4
2501 ₺ and Above	72	19.9

Financial literacy scale statements were rated and scored in the five-point Likert type. The Cronbach Alpha value financial literacy scale was determined as 0.939. It was also observed that the items of the scale in question were homogeneous and related expressions and that the test was collectible ($F=54.755$, $p=0.0001<0.05$; $F=3.287$, $p=0.07>0.05$). In terms of reliability analysis applications of the financial literacy scale, the test design is also appropriate ($F=35.278$, $p=0.0001<0.05$). According to the obtained results, it was seen that the scale fulfilled the reliability conditions accepted in the literature and that their internal consistency was acceptable independently. The following table summarizes the reliability analysis findings described above (Table 2).

Table 2. Reliability Analysis

	Scales	Number of Articles	Cronbach Alpha	Relationship Between Substances	Test Collectibility
Financial Literacy Level	Financial Literacy Level	8	0.939	$F=54.755$, $p=0.0001<0.05^*$	$F=3.287$, $p=0.070>0.05$
	Hotelling T^2			$F=35,278$; $p=0,0001^*$	

It was determined that the financial literacy parameter came from a normal distribution and the variances were homogeneous. The hypotheses established for both tests were accepted ($p_{\text{Shapiro-wilk}}=0.5618>0.05$; $p_{\text{Levene}}=0.368>0.05$). In line with these results, statistical analyses for some demographic characteristics and financial literacy values will be examined with parametric test methods. Table 3 supports the findings of this explanation.

Table 3. Normality and Homogeneity Test

	Statistical Value	df	p
Shapiro–Wilk Statistics	0,961	362	0.561
Levene Statistics	1.004	1, 359	0.368

* Statistical researches were carried out at a 95% confidence level.

4. RESULTS

4.1. Testing Hypotheses

4.1.1. Gender Differences in Financial Literacy

The findings of the differences in the sub-dimensions of the financial literacy scale according to gender are given below in Table 3.

Table 4. Difference in Financial Literacy Level According to Gender

Dimensions	Gender	n	Average	Std. Dv.	t-value	p-value
Financial Literacy Level	Female	180	3.195	0.577	2.285	0.023
	Male	182	3.363	0.803		

The results obtained are as follows: Financial literacy level scores were determined as 3.195 ± 0.577 for women, while it was determined as 0.803 ± 3.363 for men. Men's financial literacy level scores were statistically significantly higher than women's ($p=0.023<0.05$). In line with the results, the hypothesis which was developed within the scope of the study;

"*H₁: There is a significant relationship between gender and financial literacy level*" was accepted.

4.1.2. Differences in Financial Literacy Level According to Age

The findings of the differences in the financial literacy scale according to the age of the participants are given below in Table 4.

Table 5. Difference in Financial Literacy Level According to Age

Dimensions	Age	n	Average	Std. D.	F	p	Group difference
Financial Literacy Level	< 18	80	3.267	0.718	11.362	<0.000	a
	18 – 20	92	3.169	0.668			a
	≥ 20	190	3.553	0.685			b

Multiple comparisons were made with the One-way ANOVA test and binary comparisons were made with the Tukey test. In group comparisons; there are statistically significant differences between groups with different letters. $*\alpha=0.05$. The level of financial literacy was observed as $3,267 \pm 0.718$ in participants under 18 years of age, while the average score of people between the ages of 18-20 was determined as $3,169 \pm 0.668$. Among the people over the age of 20, the average level of financial literacy was $3,553 \pm 0.685$. According to the results; The level of financial literacy differs significantly according to the age of the individuals in terms of statistics ($p<0.000<0.05$).

The differences between the age groups are as follows: The level of financial literacy was determined to be statistically significantly less in people younger than 18 years of age than in people older than 20 years. The level of financial literacy of people between the ages of 18-20 is again statistically significantly lower than that of people older than 20 years. As a result, the financial literacy level of people over the age of 20 was found to be higher than other age groups. According to the results obtained, developed within the scope of the study,

The hypothesis "*H₂: There is a significant relationship between age and financial literacy level*" was accepted.

4.1.3. Differences in Financial Literacy Level According to Education Status

The findings of the differences in the financial literacy level scale according to their educational status are given below in Table 5.

Table 6. Difference in Financial Literacy Level According to Educational Status

Dimensions	Education	n	Average	Std. Dv.	t	p
Financial Literacy Level	License	122	3.124	0.685	3.033	0.003
	Associate	240	3.358	0.701		

While the financial literacy level scores of the undergraduate level participants were 3.124 ± 0.685 , the financial literacy level scores of the associate degree level participants were 3.358 ± 0.701 . The financial literacy level of the associate degree level participants was statistically significantly higher than the undergraduate level participants ($p=0.03<0.05$). According to the results obtained, the hypothesis which was developed within the scope of the study according to the obtained results " H_3 : There is a significant relationship between educational status and financial literacy level" was accepted.

4.1.4. Differences in Financial Literacy Level According to Income Status

The findings of the differences in the financial literacy scale according to the income level of the participants are given in Table 6.

Table 7. Difference in Financial Literacy Level According to Income Status

Dimensions	Income	n	Average	Std. D.	F	p	Group difference
Financial Literacy Level	< 2000	140	3.235	0.730	14.727	<0.000	a
	2000–2500	150	3.360	0.645			a
	≥ 2501	72	3.767	0.661			b

While the financial literacy level scores of the participants with an income level below 2000 TL were determined as 3.235 ± 0.730 , the financial literacy level scores of the participants between 2000-2500 TL were determined as 3.360 ± 0.645 . The average financial literacy level of people with an income of 2501 TL and above is 3.767 ± 0.661 . In the results which were obtained, it was determined that financial literacy levels showed statistically significant differences according to the income level of consumers ($p<0.00<0.05$). The results are as follows: In the study, the financial literacy level of people with an income status of 2501 liras and above was determined as statistically significantly higher than those whose income level was below 2000 liras and those between 2000 and 2500 liras. Consumers with incomes below 2000 liras and between 2000 and 2500 liras have a statistically similar level of financial literacy. According to the obtained results, the hypothesis called " H_4 : There is a significant relationship between income status and financial literacy level" and which was developed within the scope of the study was accepted.

5. CONCLUSION and DISCUSSION

As financial markets have evolved, complex financial products and services have emerged that are difficult to understand for consumers who do not have a sufficient level of information (Van Rooij et al., 2011). The liberalization of the market with such complex products and services and the increasing need for financial information due to increased competition have enabled researchers to focus on measuring the effects of financial literacy level on financial decisions. In this measurement, the researchers point out that many factors can have an impact on financial literacy. There are many indications of the impact of demographic factors on financial literacy. Numerous studies (Chen & Volpe, 2002; Van Rooij et al., 2011; Lusardi, 2012; Lin et al., 2017) confirm that socio-demographic factors such as gender, age, education level, income status, marital status, title, parental influence, entrepreneurial spirit, etc. are important factors on the financial literacy levels of individuals.

In this study, where it was aimed to determine the effects of demographic factors on the financial literacy levels of consumers, it was concluded that demographic factors affected the financial literacy levels of consumers. According to this result, all of the hypotheses which were developed (H₁, H₂, H₃, and H₄) were accepted. When his result is compared to the literature, it is similar to the work of Chen & Volpe (2002); Wangland (2009); Almenbergh & Söderbergh (2011); Hastings et al., (2013); De Bassa Scheresberg (2013); Sekita, 2011; Mouna & Anis (2017); Beichar (2018). In particular, the number of studies examining the effect of gender on the level of financial literacy is more predominant, such as Chen & Volpe (2002); Wangland (2009); Beichar (2018). In this study, the financial literacy level scores of especially male participants were statistically significantly higher than women in terms of gender ($p=0.023<0.05$). At this point, it can be said that women's financial literacy levels need to be improved a bit more. When the results of other demographic characteristics were evaluated, the financial literacy level of people older than 20 years was higher than other age groups. Therefore, providing financial literacy training to young people who are potential consumers until the age of 20 will enable them to be more successful in their financial decisions. In terms of education level, the financial literacy level of associate degree-level participants was statistically significantly higher than that of undergraduate-level participants ($p=0.03<0.05$). The fact that the distribution here is not very balanced may have an impact on this result, but the result here indicates that there is an inverse correlation between education level and financial literacy level. Ferguson (2002) differs from this study, albeit in part because he argues that financial problems cannot be completely overcome by education alone. On the other hand, the financial literacy level of people with an income status of 2501 TL and above differed significantly from those whose income level was below 2000 TL and those between 2000 and 2500 TL in terms of statistics. This result shows that the level of financial literacy will increase as the income situation increases. In other words, as people's incomes increase, their standard of living will increase, which will allow them to engage in different financial instruments. For that reason, more financial information is needed. This requirement can only be met with an adequate level of financial literacy.

What has been described so far shows that the concept of financial literacy has the potential to become an increasingly important component (Grohmann, 2018). Consciously or unconsciously, the consumers who spend continuously, especially in recent times, have become the center of attention and increased their importance even more. Undoubtedly, not only consumers but also all actors in financial life such as investors and producers should give due importance to financial literacy in order not to have difficulty in choosing financial instruments and to obtain higher returns (Jiang, et al., 2020).

There are some limitations in this study. Due to time pressure, no further data could be accessed. The research was conducted on university students. In the research which employs other segments of society, different results can be reached. At the same time, the possibility of different results differing from a sample with different demographics in different cities and countries should be evaluated. On the other hand, with the use of different analysis techniques, different results can be reached. Paying attention to these issues in the future research to be carried out in this regard and the use of different techniques, including qualitative methods, will further reduce the mentioned constraints and ensure the emergence of studies with high added value.

AUTHORS' DECLARATION

This paper complies with Research and Publication Ethics, has no conflict of interest to declare, and has received no financial support. The author(s) sent a signed "Copyright Transfer Form" to the journal. There is no need to obtain ethical permission for the current study as per the legislation. The "Declaration Form Regarding No Ethics Permission Required" was sent to the journal by the authors on this subject.

AUTHORS' CONTRIBUTIONS

Conceptualization, writing-original draft, editing – ASK, data collection, methodology, formal analysis – ASK and AG, Final Approval and Accountability – ASK and AG.

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Haiti's Political Turmoil: An Examination of its Implications on Foreign Direct Investment

Haiti'nin Siyasi Çalkantısı: Doğrudan Yabancı Yatırım Üzerindeki Etkilerinin İncelenmesi

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ABSTRACT

Keywords:
Political Instability,
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Jel Codes:
D72, F21, F59

Haiti is a country with a history of political instability and faces considerable challenges in attracting foreign direct investment (FDI). This study investigates the impact of political turmoil on FDI in Haiti from 1994 to 2020. The study relies on secondary data obtained from sources such as International Financial Statistics (IFS), World Development Indicators (WDI), and the International Country Risk Guide (ICRG). The study utilizes the Vector Error Correction Model (VECM) and the Dynamic Ordinary Least Squares (DOLS) statistical technique. The findings indicate that, over the long run, political instability and inflation have an adverse influence on FDI in Haiti. Conversely, exchange rate, interest rate, and trade openness positively affect FDI. However, these variables do not directly drive FDI in the short term but are influenced by external factors. This paper emphasizes the critical role of establishing a stable political environment, effectively managing inflation, and maintaining competitive exchange rates and interest rates to enhance FDI attraction. Additionally, promoting trade openness is deemed crucial.

ÖZET

Anahtar Kelimeler :
Siyasi İstikrarsızlık,
Doğrudan Yabancı
Yatırım,
Haiti
Jel Kodları:
D72, F21, F59

Haiti, siyasi istikrarsızlık geçmişiyle sahip ve doğrudan yabancı yatırım (FDI) çekme konusunda önemli zorluklarla karşı karşıya olan bir ülkedir. Bu çalışma, 1994-2020 yılları arasında Haiti'deki siyasi çalkantının FDI üzerindeki etkisini incelemektedir. Çalışma, Uluslararası Finans İstatistikleri (IFS), Dünya Kalkınma Göstergeleri (WDI) ve Uluslararası Ülke Risk Rehberi (ICRG) kaynaklarından elde edilen ikincil verilere dayanmaktadır. Çalışma, Vektör Hata Düzeltme Modeli (VECM) ve Dynamic Ordinary Least Squares (DOLS) istatistiksel tekniği kullanmaktadır. Bulgular, uzun vadede siyasi istikrarsızlık ve enflasyonun Haiti'deki FDI üzerinde olumsuz bir etkisi olduğunu göstermektedir. Bununla birlikte, döviz kuru, faiz oranı ve ticaret açıklığı FDI'yi olumlu etkiler. Ancak bu değişkenler kısa vadede doğrudan yabancı yatırımları yönlendirmemekte, dış faktörlerden etkilenmektedir. Bu çalışma, doğrudan yabancı yatırım çekiciliğini artırmak için istikrarlı bir siyasi ortam oluşturmanın, enflasyonu etkili bir şekilde yönetmenin ve rekabetçi döviz ve faiz oranlarını sürdürmenin kritik rolünü vurgulamaktadır. Ayrıca, ticari açıklığın teşvik edilmesinin de önemli olduğu değerlendirilmektedir.

1. INTRODUCTION

Haiti is the first independent nation in the Caribbean, and has a long history of political instability. Following its independence in 1804, the nation witnessed a series of events including assassinations, external intervention, and the overthrow of democratically elected leaders. The most extended period of stability was experienced during the Duvalier dictatorship from 1957 to 1986. After the fall of the Duvalier regime, Haiti embarked on a journey toward democracy. Amendments were made to the constitution to establish autonomous entities tasked with safeguarding the division of authority. Yet, the outcome of this separation of powers fell short of expectations. This state of political instability slows down the country's economic growth and discourages foreign investors.

Haiti's self-generated economic resources are insufficient for sustained growth, necessitating foreign direct investment (FDI) to complement local investments and achieve its economic objectives. FDI can help to boost its economic growth by bringing in new technologies, creating jobs, and improving managerial skills and human capital. FDI can also create job opportunities, which leads to higher economic growth. In developing countries, FDI has been shown to increase productivity and make manufacturers more competitive (Yousaf et al., 2008). However, Haiti is constantly struggling with political instability, which discourages FDI. As illustrated in Figure 1 despite reaching a peak in 2017, FDI inflows have consistently dwindled over the subsequent three years. Foreign and domestic businesses are cautious about investing in Haiti due to the volatile political environment.

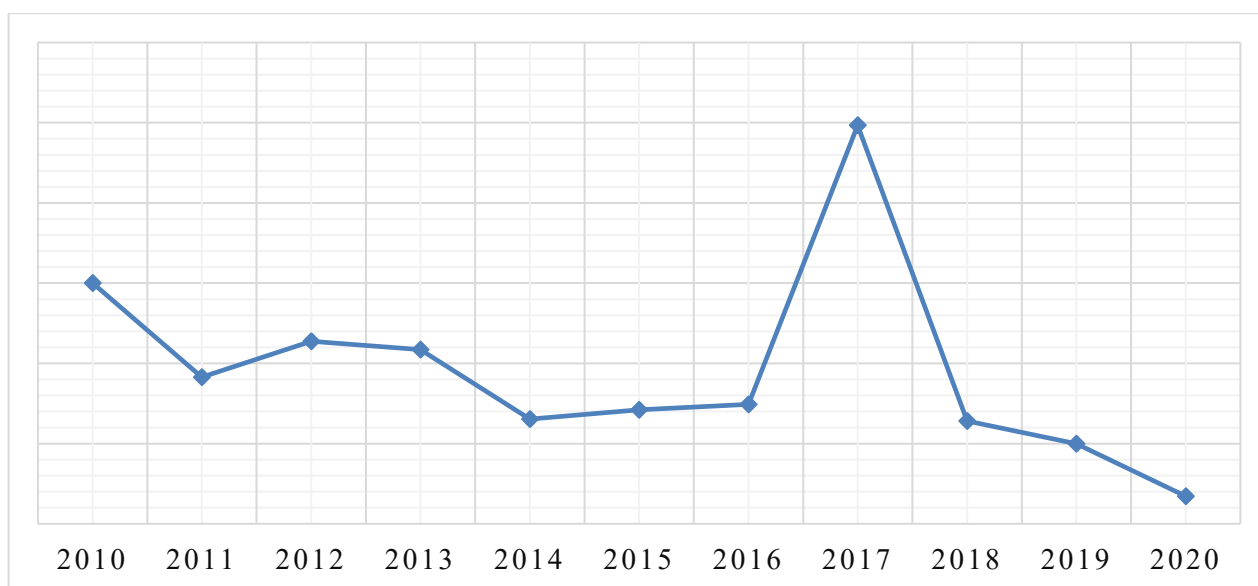


Figure 1. Foreign Direct Investments in Haiti (2010-2020)
Source: Prepared by the authors (Data from WDI, 2023)

Foreign investors prioritize the stability of a country's institutions when evaluating the potential returns on their investments. Their decision-making process is primarily influenced by the political climate of a nation. When faced with an unstable environment, investors become apprehensive about risking their capital, which they have earned through considerable effort. In essence, political instability diminishes the confidence of foreign investors and lowers their expectations regarding the profitability of their investments (Brada et al., 2003).

This study aims to bridge the existing gaps in the literature by providing novel quantitative assessments of the influence of political instability on FDI, with a specific focus on Haiti. The study employs the Vector Error Correction Model (VECM) and the Dynamic Ordinary Least Squares (DOLS) technique to analyze this relationship. This study makes a valuable addition to the empirical literature concerning the effects of political unrest on FDI in the context of Haiti. It becomes evident that the flow of FDI in Haiti is closely connected to periods of political instability. Such political turbulence exerts an adverse impact on foreign investments, reflecting a lack of confidence among potential international investors. Additionally, this study underlines the significance of factors such as interest rate, trade openness, and exchange rate as substantial contributors to FDI in Haiti.

The structure of this paper is outlined as follows. Section 2 presents a review of the relevant literature that has guided this research. Section 3 describes the data, methodology, and model specifications used in the study. Section 4 elaborates on the empirical findings, while Section 5 concludes with a discussion of the policy implications.

2. LITERATURE REVIEW

Many studies have shown that countries characterized by stable political systems tend to be more appealing to FDI. Brada et al. (2003) found that political instability caused by both domestic and international conflicts has a negative impact on FDI inflows in Central Europe and the Balkan region. However, they also found that political reforms have a positive impact on FDI inflows in these regions. Bakari et al. (2013); Bouchoucha & Ben Ammou (2015); Bokhari et al. (2021) have provided empirical evidence highlighting the significance of political instability in influencing the levels of FDI inflows in developing nations.

Busse & Hefeker (2007) applied Ordinary Least Squares (OLS), fixed effects, and the Generalized Method of Moments (GMM) in their analysis of 83 developing countries spanning the years 1984-2003. They conducted regressions by introducing each factor from the 12 components of the International Country Risk Guide (ICRG) along with other control variables to examine their impact on FDI. Their findings suggest that political risk and institutional indicators are not only highly significant in relation to FDI but also play a crucial role in influencing the investment decisions of multinational corporations.

Sekkat & Vezina (2007) addressed the comprehensive investment environment within a country, including location advantages in the OLI¹ paradigm. This includes infrastructure endowment, economic conditions, and the political environment. They examined the impact on both total FDI flows and FDI specifically in manufacturing, utilizing a panel data econometric regression model with fixed and random effects for the period 1990-1999. The total FDI sample comprised 72 developing countries, while the FDI in the manufacturing sample was limited to 20 observations due to data constraints. The results for total FDI indicated that market size, openness, infrastructure, economic risk, and political risk are significant and positively correlated with FDI.

Karifa-Schneider et al. (2010) discovered a positive link between reduced levels of political risk and an increase in FDI inflows across 33 developing and emerging nations. This implies that countries characterized by lower political risk tend to attract greater amounts of FDI.

Slangen & Beugelsdijk (2010) investigated the impact of institutional hazards on vertical and horizontal FDI. They tested their hypotheses within a contingency framework using data on aggregate sales of goods by US foreign affiliates across different host countries for the period 1996-2004. They applied generalized least squares regression, seemingly unrelated regression, and Heckman's two-stage analysis. The findings reveal that institutional hazards exhibit a statistically significant adverse effect on vertical FDI. Furthermore, governance deficiencies have a more substantial and significant impact compared to cultural distance on both forms of FDI.

Baek & Qian (2011) discovered that political risks exert varying impacts on the influx of FDI in developed and developing countries. They also identified that both developed and developing countries are drawn to FDI when they exhibit substantial levels of democracy and possess an appealing investment climate as shared political attributes.

In a study conducted by Vadlamannati (2012), micro-level data concerning U.S. multinational corporations investing in 101 developing countries was utilized to investigate how political instability affects U.S. foreign investments. The research revealed that a reduced level of political risk in the host country correlates with increased FDI by U.S. multinational companies and a higher rate of return.

Morrissey & Udomkerdmongkol (2012) conducted a study examining the connection between FDI and domestic private investment across 46 developing nations from 1996 to 2009. Their findings indicated that countries with stronger governance structures tend to be more attractive to both FDI and domestic private investment. The study also revealed that political instability and corruption exerted a noteworthy adverse influence on investment. In essence, the authors established that governance directly affects both private investment and FDI.

Hayakawa et al. (2013) employed the risk indices from ICRG to investigate the impact of a combination of political and financial risk components on FDI inflows from 1985 to 2007. Their study included a sample of 93 countries, consisting of developed and developing nations, with a particular emphasis on the latter. They utilized fixed effects models and dynamic GMM methodology for their regression analyses. Their key finding indicated that political risk serves as a robust determinant of FDI. Among the 12 ICRG components examined, socioeconomic conditions, internal and external conflict, government stability, religious tensions, corruption, investment profile, ethnic tensions, and democratic accountability emerged as significant determinants of FDI

¹ The OLI framework is a theoretical model that elucidates the reasons behind firms' decisions to invest in foreign countries. This model revolves around three primary components: ownership advantages, location advantages, and internalization advantages. Location advantages encompass the attributes that render a country appealing for foreign investments, including aspects like market size, infrastructure, and political stability.

flows. Particularly, investment profile, external conflict, and socioeconomic conditions were identified as the most influential components.

Al-Khoury & Abdul Khalik (2013) investigated the impact of political risk on FDI net inflows in the MENA region. When considering all countries, the findings revealed a negative association between political risk and FDI. Specifically, among the 12 political risk indicators examined, corruption and external conflict demonstrated a statistically significant adverse correlation with FDI. In contrast, less democracy and greater socioeconomic pressures exhibited statistically significant positive relationships with FDI.

Burger et al., (2013) examined how the Arab Spring influenced the performance of various economic sectors in the Middle East and North Africa (MENA) area. Employing OLS estimation with data concerning greenfield investments in MENA nations, they found a negative association between the Arab Spring and investments in the manufacturing sector.

Khan & Akbar (2013) explored the correlation between political risk and FDI by focusing on individual political risk factors. They conducted their analysis using panel data from 94 countries spanning the period 1986-2009. Their investigation included specific categories such as lower middle-income, upper middle-income, low-income, and high-income countries. Their study suggested that countries must address and minimize political risk and uncertainty. These factors were identified as exerting a negative impact on FDI.

Goswami & Haider (2014) explored how governance failure, cultural conflict, and partner attitudes impact FDI inflows in both developing and developed nations. They uncovered that cultural conflict and partner attitudes play significant roles in impeding FDI inflows, while intriguingly, under the fixed effect assumption, governance failure appeared to encourage FDI.

Bouyahiaoui & Hammache (2013) conducted a statistical analysis to assess the impact of the Arab Spring on FDI in the MENA region. Their study revealed that the considerable political upheavals in nations such as Egypt, Tunisia, Libya, and Yemen, along with the ongoing political instability in Mediterranean countries like Iraq, Iran, and Bahrain, constitute substantial obstacles that hinder the flow of FDI into the MENA region.

Hira (2017) investigates the impact of political uncertainty on the behavior of corporate investors in Pakistan. The author utilized stock prices as a gauge for assessing political uncertainty and accessed data from the Yahoo Finance index pertaining to the Pakistan stock market during the period spanning 1998 to 2012. The analytical method employed was the ARDL model, which was used to scrutinize the connection between political instability and the stock market index. The outcomes of the study revealed a negative correlation between political instability and stock prices, signifying that an unstable political environment tends to coincide with reduced stock prices. Furthermore, the study also indicated positive associations between stock prices and both exports and industrial production, while showing a negative relationship with inflation.

Kurecic & Kokotovic (2017) investigated the relationship between political instability and FDI in small and large economies. Employing the Granger Causality test and Vector Autoregressive (VAR) methods, they identified an adverse influence of political instability on FDI inflow, particularly in small economies. In contrast, no such clear connection was observed for larger economies.

Bitar et al. (2019) focused on Lebanon to explore the relationship between political risk and FDI. They utilized 12 political risk indicators from the ICRG, which were organized into three categories following the resolution of overlap issues, to examine data spanning from 2008 to 2018. The results offer proof of significant causality between all factors related to political risk and FDI inflow.

Tung & Thang (2020) delved into the connection between FDI and domestic private investment within 49 developing nations across Asia and Africa. Their findings revealed that FDI serves to complement private investment, indicating that FDI tends to stimulate an increase in private investment. The research also highlighted that previous private investment plays a vital role in predicting future private investment. Furthermore, the authors noted that trade openness, per capita GDP, and electricity availability all exert a positive influence on private investment.

3. METHODOLOGY

Numerous economic theories shed light on the motivations behind foreign companies opting to invest in other countries. One widely accepted theory is the neoclassical perspective, which argues that FDI has a positive impact on a country's economic progress. This is because FDI brings in fresh capital, advanced technology, and

employment opportunities to the recipient country. It stimulates local enterprises to increase their investments and enhance their productivity. Aside from fostering economic development, FDI can contribute to the accumulation of capital within the host country. This translates to an increased pool of resources available for investment, thereby potentially bolstering economic growth.

In this study, we have constructed a comprehensive model for FDI inflows, drawing from prior studies. The factors we have incorporated into our model are expected to have an impact on FDI inflows, as they are frequently cited as significant factors influencing investment location within the OLI framework (Vernon, 1966; Rugman, 1981; Dunning, 2000). The factors that we have included in our model are political instability, trade openness, interest rates, exchange rates, inflation rates, and real GDP.

Our approach to examine the influence of political instability on FDI inflows in Haiti shares similarities with the models employed by Oladipo et al., (2007), Bhatti et al., (2008); Del Bo (2009); Mádr & Kouba (2015). The model we will employ to investigate the effects of political instability on FDI inflows is outlined as follows:

$$FDI_t = \beta_0 + \beta_1 PI_t + \beta_2 TO_t + \beta_3 GDP_t + \beta_4 IR_t + \beta_5 INF_t + \beta_6 ER_t + \mu_t \quad (1)$$

Table 1 presents the data employed in our study, their representation, their description, and the data sources.

Variables	SIGN	Description of the variables	Source
Foreign Direct Investment	FDI	Denotes the percentage of annual inflows.	WDI
Political Instability	PI	Political Risk index	ICRG
Trade Openness	TO	The combined value of exports and imports as the percentage of GDP	WDI
Interest Rate	IR	Interest rate (Lending rate)	IFS
Real GDP	GDP	GDP per capita, PPP (constant 2017 international \$)	WDI
Inflation	INF	Consumer Price Index (CPI)	WDI
Exchange Rate	ER	Domestic Currency Per US Dollar)	IFS

Figure 2 illustrates the temporal evolution of the data utilized in our study. This can be beneficial for comprehending the study's findings and for making inferences. It can also help in identifying potential correlations between the variables and, if such correlations exist, understanding their direction.

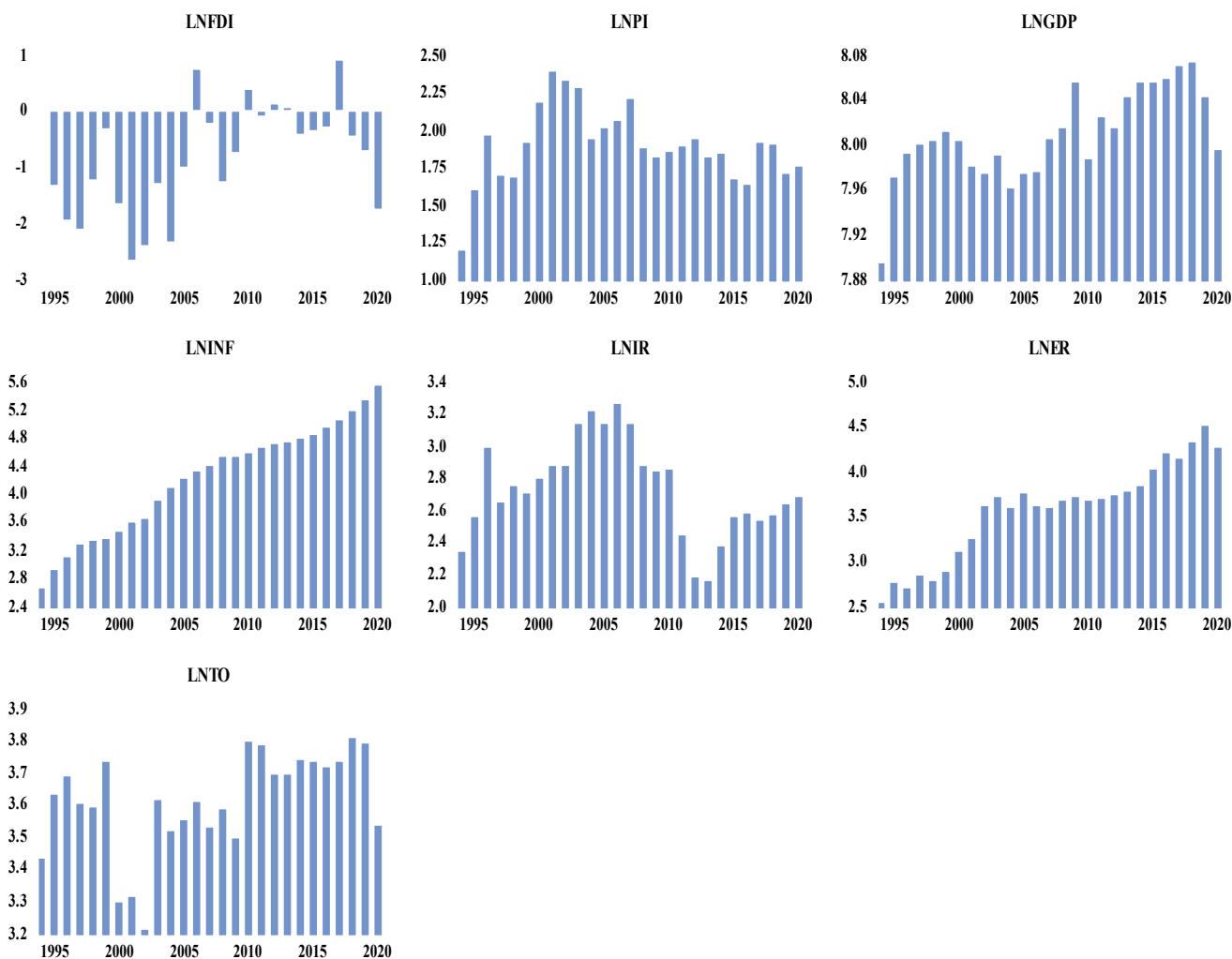


Figure 2. Time Series Plots of the Logarithmic Form of Variables

Table 2 presents the outcomes of the first step in our statistical analysis, which is a descriptive examination. One observes that the mean statistic of real GDP is higher than that of all other variables, and the mean, minimum, and maximum values of lnPI, lnER, lnIR, lnTO, and lnINF are relatively close to each other.

Table 2. Descriptive Statistics

Variables	Mean	Standard Dev.	Minimum	Maximum
lnFDI	-0.8571	0.9835	-2.6665	0.9097
lnPI	1.8966	0.2524	1.2039	2.3978
lnER	3.5818	0.5376	2.5608	4.5216
lnGDP	8.0093	0.0401	7.8953	8.0738
lnIR	2.7374	0.2998	2.1659	3.2721
lnTO	3.6126	0.1575	3.2164	3.8097
lnINF	4.2304	0.7873	2.6858	5.5658

After the data summarization and description, we applied statistical models to assess unit roots and cointegration. Unit root testing is employed to establish whether a time series is stationary, signifying that its mean and variance remain constant over time. Cointegration testing is utilized to ascertain if two or more time series exhibit a shared movement over time. The study follows the augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests to test the unit root. Once stationarity is confirmed, the Johansen cointegration test is applied to assess cointegration (Johansen, 1988, 1990).

4. EMPIRICAL FINDINGS

Table 3 displays the outcomes of the unit root tests. The Augmented Dickey-Fuller and Phillip Perron unit root test statistics yield varying results regarding the null hypotheses for the series at their original levels. However, both test statistics indicate that the first-differenced versions of the series exhibit stationarity. Consequently, it can be inferred that the series are integrated of the first order $[I(1)]$.

Table 3. Unit Root Tests

Test Statistic Times series	Augmented Dickey Fuller(ADF)		Phillips-Perron(PP)	
	Level	1st difference	Level	1st difference
lnFDI	-2.7514 (0.2264)	-5.3215* (0.0014)	-2.5788 (0.2918)	-8.7600* (0.0000)
lnPI	-3.0722 (0.1341)	-4.6767* (0.0051)	-3.7985** (0.0331)	-5.0978* (0.0020)
lnER	-2.6740 (0.2549)	-4.6920* (0.0050)	-2.0611 (0.5422)	-4.6920* (0.0050)
lnGDP	-3.3585 (0.0792)	-6.1085* (0.0002)	-3.5350*** (0.0563)	-6.1701* (0.0002)
lnIR	-2.2316 (0.4530)	-4.3615** (0.0103)	-2.3886 (0.3763)	-4.3426** (0.0107)
lnTO	-3.1877 (0.1087)	-6.3476* (0.0001)	-3.2043 (0.1054)	-6.7670* (0.0000)
lnINF	0.0463 (0.9545)	-3.0823** (0.0410)	-1.2525 (0.6355)	-3.0823** (0.0410)

With *,**,*** illustrate 1%, 5%, and 10% statistical significance respectively.

Table 4 depicts the results of the Johansen cointegration test and shows that there is statistically significant cointegrating relationship between the variables in the model at the 0.05 significance level. The Trace test indicates that there are 3 cointegrating equations, while the Max-Eigen test shows that there are at least 2 cointegrating equations. Given the cointegration of the variables, employing the VECM is a suitable approach for examining both the short-term dynamics and long-term equilibrium of these variables.

Table 4. Cointegration Tests

Hypothesized No. of CE(s)	Trace Statistic	0.05 Critical Value	Prob.**
None *	170.6365	95.7536	0.0000
At most 1 *	99.1598	69.8188	0.0000
At most 2 *	52.5379	47.8561	0.0170
At most 3	27.0771	29.7970	0.0998
Hypothesized No. of CE(s)	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	71.4767	40.0775	0.0000
At most 1*	46.6218	33.8768	0.0009
At most 2	25.4607	27.5843	0.0912
At most 3	16.3448	21.1316	0.2054

Once the cointegrating equations are determined, we normalize them with respect to the FDI variable and choose the most suitable one that accurately captures the relationship between the variables. The VECM outcomes are showcased in tables 5 and 6. Based on these results, we draw the following conclusions regarding Haiti:

In the short run, the variables of political instability, gross domestic product, trade openness, exchange rate, and interest rate are considered exogenous. This indicates that these variables are not drivers of FDI; instead, they are influenced by external factors not considered in the model.

Over the long run, political instability and inflation are both statistically significant and exert a detrimental effect on FDI. This implies that an increase in political instability or inflation leads to a reduction in FDI. Additionally,

exchange rate, interest rate, and trade openness are also statistically significant and positively influence FDI. Consequently, when the exchange rate, interest rate, or trade openness decreases, FDI experiences an increase. The significant adjustment term at a 5% level suggests that discrepancies from the long-term equilibrium are rectified at a rate of 8.162%.

Table 5. Long-run Estimates

lnFDI	Coefficient	Std. Err.	z	p-value
lnPI	-0.8173**	0.3285	2.49	0.013
lnGDP	-1.6787	1.7653	0.95	0.342
lnER	5.6216*	0.3611	-15.56	0.000
lnIR	0.87496*	0.1232	-7.10	0.000
lnINF	-3.6670*	0.2815	13.02	0.000
lnTO	5.5423*	0.4404	-12.58	0.000

Note: *,** illustrate 1% and 5%, statistical significance respectively.

Table 6. Short-run Estimates

lnFDI	Coefficient	Std. Err.	z	p-value
ECT	0.8162*	0.3077	-2.65	0.008
lnPI	1.1064	1.1321	-0.98	0.328
lnGDP	-6.6991	7.3323	0.91	0.361
lnER	2.8718	2.0217	-1.42	0.155
lnIR	1.4642	1.1666	-1.26	0.209
lnINF	10.1643**	4.8785	-2.08	0.037
lnTO	2.4219	1.4426	-1.68	0.093

Note: *,** illustrate 1% and 5%, statistical significance respectively.

Considering the long-term dynamics among the variables, the DOLS technique was employed to calculate long-term coefficients. In Table 7, the outcomes of the DOLS reveal that over the long run, political instability and inflation adversely affect FDI. In contrast, a positive correlation is observed between FDI and exchange rate, interest rate, and trade openness. Overall, based on these results, it is reasonable to affirm that political instability significantly discourages FDI in Haiti, thereby hampering the country's prospects for economic development.

Table 7. DOLS Results (Dependent Variable: lnFDI)

DOLS			
	Coefficient	t-Statistic	p-value
lnPI	-3.2709**	-3.3908	0.0147
lnGDP	-11.8106**	-3.0874	0.0215
lnIR	0.8633**	2.7257	0.0344
lnER	9.2148*	7.3089	0.0003
lnINF	-6.1365*	-6.6795	0.0005
lnTO	5.6283*	4.0975	0.0064

Note: *,** illustrate 1% and 5%, statistical significance respectively.

5. CONCLUSION

This study explores the influence of political instability on the FDI dynamics in Haiti from 1994 to 2020. The results of the study indicate that in the long term, political instability and inflation negatively affect FDI. Conversely, exchange rates, interest rates, and trade openness exhibit statistical significance and positively impact FDI in Haiti. In the short term, these variables do not act as FDI catalysts; rather, they are influenced by external factors that were not considered in the model.

Based on the findings of this study, to enhance foreign investment inflows, Haiti should prioritize establishing a stable political climate, managing inflation effectively, and ensuring competitive exchange rates and interest rates. Furthermore, efforts to promote trade openness should also be a focal point for Haiti. The results align with prior research, including studies by Brada et al. (2003); Busse & Hefeker (2007); Bokhari et al. (2021), which similarly assert that political instability results in reduced FDI. Countries with political instability and high inflation rates tend to have diminished appeal for foreign investors. This diminished attractiveness arises from the inherent risks posed to investors and the challenges they encounter in realizing profits. On the other hand, countries characterized by political stability, low inflation, a favorable exchange rate, and open economic policies are more inclined to entice foreign investments.

The paper suggests that Haiti needs to address its political instability in order to attract more FDI and promote economic growth. The government can do this by adopting long-term policies that will strengthen institutions, reduce corruption, and promote peace and stability.

In future research, it is advisable to take into account the particular industry or sector when examining the connection between political factors and FDI. For instance, certain industries, like the financial sector, can be significantly more susceptible to the effects of political instability compared to others. Future studies should also take into account elements such as market size and infrastructure. Countries with large markets and well-developed infrastructure are more inclined to appeal to foreign investors.

AUTHORS' DECLARATION

This paper complies with Research and Publication Ethics, has no conflict of interest to declare, and has received no financial support.

AUTHORS' CONTRIBUTIONS

Conceptualization, writing-original draft, editing – **PRLJ** and **SAK**, data collection, methodology, formal analysis – **PRLJ**, Final Approval and Accountability – **PRLJ** and **SAK**

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Regional Comprehensive Economic Partnership (RCEP): Evaluation of Trade Relations Between Member Countries Using the Social Network Analysis Method

Bölgesel Kapsamlı Ekonomik Ortaklık (RCEP): Üye Ülkeler Arasındaki Ticari İlişkilerin Sosyal Ağ Analizi Yöntemi İle Değerlendirilmesi

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ABSTRACT

Keywords:

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The Regional Comprehensive Economic Partnership (RCEP) agreement was signed in 2020 as a giant free trade agreement signed by 15 countries, including China. In this context, the RCEP agreement is the world's largest free trade agreement in terms of GDP and trade volume. In this study, commercial relations between RCEP countries between 2012 (the year when negotiations of the RCEP agreement began) and 2021 were examined using social network analysis. In the analyses, export values of RCEP countries to each other were used and the data were obtained from Trade Map. In the study, social network analyzes for the years 2012, 2015, 2018 and 2021 were analyzed using the Ucinet program, while trade networks were visualized with the Gephi program. For social network analyses, basic ego network indicators, degree centrality values, hub and authority centrality values and eigenvector values were calculated. As a result of the analysis, it is seen that the hub and authority country in trade between RCEP countries is China for all four years (2012, 2015, 2018 and 2021). On the other hand, it has been determined that China's most important trade partners are Japan and South Korea. Additionally, the development in Vietnam's trade level during this period is remarkable.

ÖZET

Anahtar Kelimeler:

RCEP,

Sosyal Ağ Analizi,

Uluslararası Ticaret

Jel Kodları:

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Bölgesel Kapsamlı Ekonomik Ortaklık (RCEP) anlaşması, Çin'in de aralarında bulunduğu 15 ülkenin taraf olduğu dev bir serbest ticaret anlaşması olarak 2020 yılında imzalanmıştır. Bu bağlamda, RCEP anlaşması GSYİH ve ticaret hacmi açısından dünyanın en büyük serbest ticaret anlaşmasıdır. Bu çalışmada, 2012 (RCEP anlaşmasının müzakerelerinin başladığı yıl) ile 2021 yılları arasındaki RCEP ülkeleri arasındaki ticari ilişkiler sosyal ağ analizi kullanılarak incelenmiştir. Analizlerde, RCEP ülkelerinin birbirlerine yaptıkları ihracat değerleri kullanılmış ve veriler Trade Map'ten elde edilmiştir. Çalışmada, 2012, 2015, 2018 and 2021 yıllarına ilişkin sosyal ağ analizleri Ucinet programı kullanılarak analiz edilirken, Gephi programıyla ticaret ağları görselleştirilmiştir. Sosyal ağ analizleri için temel ego ağ göstergeleri, derece merkeziliği değerleri, odak ve otorite merkeziliği değerleri ve özvektör değerleri hesaplanmıştır. Analizler sonucunda RCEP ülkeleri arasında yapılan ticarete odak ve otorite konumunda olan ülkenin dört yıl (2012, 2015, 2018 and 2021) için de Çin olduğu görülmektedir. Öte yandan Çin'in en önemli ticaret ortaklarının Japonya ve Güney Kore olduğu tespit edilmiştir. Ayrıca, Vietnam'ın bu dönemde ticaret düzeyindeki gelişme dikkat çekicidir.

1. INTRODUCTION

Since the mid-20th century, global trade has experienced a long period of growth with increasing trade volumes. But since the 1990s, the size of the world economy has doubled, giving rise to a new era of economic globalization (Jiang & Yu, 2021: 144). This change in the world economy has caused developing countries to disrupt the old order dominated by developed countries and to come to the fore as the main driving force of global trade (Hanson, 2012: 41). Increasing integration in trade has accelerated the spread of information and technology all over the world and encouraged the increase of global cooperation (Grossman & Helpman, 2015: 100).

The Association of Southeast Asian Nations (ASEAN) was established in 1967 and has been leading economic integration since then, despite many changes in the world economy. In this context, ASEAN established the ASEAN Free Trade Area (AFTA) in 1992 and the ASEAN Economic Community (AEC) in 2015 (Shimizu, 2021: 1). The AEC is an economic integration that enables the freer movement of goods, services, investment, skilled workers and capital (Ishikawa, 2021: 24). The AEC 2025 Plan consists of five core items that support each other, one of which is the completion of the Regional Comprehensive Economic Partnership (RCEP). In this way, ASEAN's centrality in global and regional participation is moved to a stronger position (Permatasari, 2020: 87).

In August 2012, the Guiding Principles and Objectives for Negotiating the Regional Comprehensive Economic Partnership were approved by the 16 Ministers of Economy. The RCEP negotiations were initiated by 10 ASEAN Member States (Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Viet Nam) and six ASEAN FTA partners (Australia, People's Republic of China, India, Japan, Republic of Korea, and New Zealand) at the 21st ASEAN Summit in Cambodia in November 2012 (Asean, 2016). RCEP is promising not only for regional integration but also for regional cooperation. Particularly in the transportation and information and communication technologies sectors, it is possible to achieve significant gains for member countries (Kimura & Chen, 2016: 4).

On 15 November 2020, after eight years of negotiations, the Regional Comprehensive Economic Partnership (RCEP) Agreement was signed by the Leaders of the ASEAN Member States (Australia, China, Japan, Republic of Korea and New Zealand) (Asean, 2020). The agreement is notable in that it accounts for 30% of global GDP, 28% of global trade and 30% of the world's population (Drysdale and Armstrong, 2021: 128). In November 2019, India withdrew from the RCEP Agreement and declared a non-reciprocal trade relationship with RCEP member states. This move of India caused various discussions in the international community (Zhao et al., 2021: 1).

It is expected that the signing of the RCEP, the world's largest trade bloc, during the COVID-19 pandemic, will play a non-negligible role in the recovery of the region after the pandemic (Zhang et al., 2023: 717). The agreement will improve market access by removing tariffs and quotas on more than 65% of traded goods and make trade more active with common rules of origin and regulations. This will encourage firms to invest more in the region by creating supply chains and services, and associated employment generation (Asean, 2020).

After former US President Trump's withdrawal from the Trans-Pacific Partnership (TPP) in 2017, the US imposition of high tariffs on imports from many countries has done great harm to countries in East Asia. This has turned the region's economic attention to the RCEP and the Comprehensive and Progressive Agreement for the Trans-Pacific Partnership (CPTPP) (Tan & Soong, 2021: 273). The successful implementation of the RCEP agreement can be attributed to the strong support of China, the active participation of Japan, the cooperation of ASEAN and the withdrawal of the US from the TPP in 2017 (Wu, 2020: 112-113).

Table 1. Export Values for RCEP Countries (US Dollar thousand)

Year	Total Exports by RCEP Countries	Exports between RCEP Countries	Exports from RCEP Countries to non-RCEP Countries	Total World Exports	Share of RCEP Countries in World Export %
2012	4,953,852,856	1,992,665,288	2,961,187,568	18,399,916,743	26.92
2013	5,060,469,676	2,027,328,652	3,033,141,024	18,858,694,469	26.83
2014	5,196,469,419	2,033,380,151	3,163,089,268	18,862,720,756	27.54
2015	4,818,339,228	1,817,769,723	3,000,569,505	16,416,919,480	29.34
2016	4,623,331,522	1,767,866,320	2,855,465,202	15,923,091,279	29.03
2017	5,119,721,751	2,014,016,432	3,105,705,319	17,562,644,182	29.15
2018	5,573,137,851	2,202,824,311	3,370,313,540	19,327,913,341	28.83
2019	5,479,817,448	2,164,827,930	3,314,989,518	18,748,620,037	29.22
2020	5,426,904,395	2,129,396,637	3,297,507,758	17,499,876,321	31.01
2021	6,869,663,374	2,656,018,614	4,213,644,760	22,138,761,100	31.03

Source: Edited by the authors using data from Trade Map.

Table 1 shows the annual export values for the RCEP countries between 2012 (the year the deal negotiations started) and 2021. While the total exports of RCEP countries increased by 38.67% in 2021 compared to 2012, it is seen that their share in world exports increased to 31.03% in 2021. This situation emphasizes the importance of RCEP countries in world trade. On the other hand, it is seen that in this process, both the export value between RCEP countries (33.29%) and the export value from RCEP countries to non-RCEP countries (42.30%) increased.

In the study, the change in commercial relations over the years between the countries that are parties to the RCEP (Regional Comprehensive Economic Partnership) agreement, a free trade agreement signed in 2020 as a result of negotiations that started in 2012 and lasted for 8 years, was examined using the social network analysis method. The aim of the study is to examine the export performance of RCEP countries, to determine the positions of the union member countries in the trade network and how they affect each other. In the literature, the RCEP agreement has been examined from many different perspectives. However, no research has been found that investigates export relations between member countries using social network analysis. It is thought that the study will contribute to the literature in this aspect.

The rest of this study is created as follows: In the subsequent section a brief literature review is given. In section 3, a detailed explanation of social network analysis is given. In Chapter 4, after giving information about the data set, social network analyzes regarding the export relations of RCEP countries are made and empirical findings are discussed. Finally, the results are evaluated and suggestions for the next studies are presented.

2. LITERATURE REVIEW

Examining international trade networks also gives researchers information about the structure of the international economic system (Deguchi et al., 2014: 1). There are many studies in the literature that research international trade networks using social network analysis. Some of the current research on the RCEP agreement and social network analysis is summarized below.

Zhu & Huang (2023) examined the effects of countries' tariff policies based on the RCEP agreement within the framework of social network theory. In the study, trade data regarding various production industries of the countries were used. Zhao et al. (2021) analyzed goods trade data of India and RCEP member countries for the period 2006-2019 using social network theory. The results of the analysis show that it would be to the advantage of India, which has withdrawn from RCEP membership, to participate in RCEP's regional cooperation. Although Taiwan is geographically located at the center of the RCEP trade area, it remains outside this agreement. Che et al. (2022) explored Taiwan's perception of exclusion and the concerns of the Taiwanese people using Semantic Network Analysis. Taiwanese netizens are more focused on political relations with China than RCEP.

Liu (2022) designed the revised gravity model to create a spatial association network of trade in RCEP countries. In the study, social network results show that China, Australia and Korea are at the center of the network. Karim et al. (2023) researched how RCEP was discussed on Twitter with 345,015 tweets using big data and network analysis. In the analyses, topic classification and sentiment analyses were performed. In the findings, it was concluded that RCEP was discussed as a strategic issue and the sentiment was slightly more negative. Zhou et al. (2021) examined the spatial correlation and evolution characteristics of the trade network of wood-based products in RCEP countries and the structure of the network using social network analysis. In the study, data for the period 2000-2019 was used. In the findings, it was determined that the centrality and evolution characteristics of RCEP countries differ according to years.

Li et al. (2022) focused on the global container transportation impact of RCEP and designed a new global container transportation network based on complex (social) network theory. In the study, a new model is proposed for restructuring the global containerized shipping network, which includes a combination of connectivity frequency, throughput, port distance and route. Qui & Gong (2021) examined the mechanisms between imports of producer services and the advantages of manufacturing in RCEP economies. In the analyses, a hierarchical linear model (HLM) was developed using data for the period 2007 to 2017. On the other hand, in the study, the percentage of producer services of RCEP countries is shown using complex (social) network analysis.

In the literature, there are many studies on RCEP countries using social network analysis. In this study, changes in the trade networks of RCEP countries in the 2012-2021 period were examined using social network analysis. In this respect, the study is thought to offer a different perspective to the literature.

3. METHODOLOGY

In this section, a detailed explanation is given about the social network analysis. The methodological framework of the study is shown in Figure 1 below.

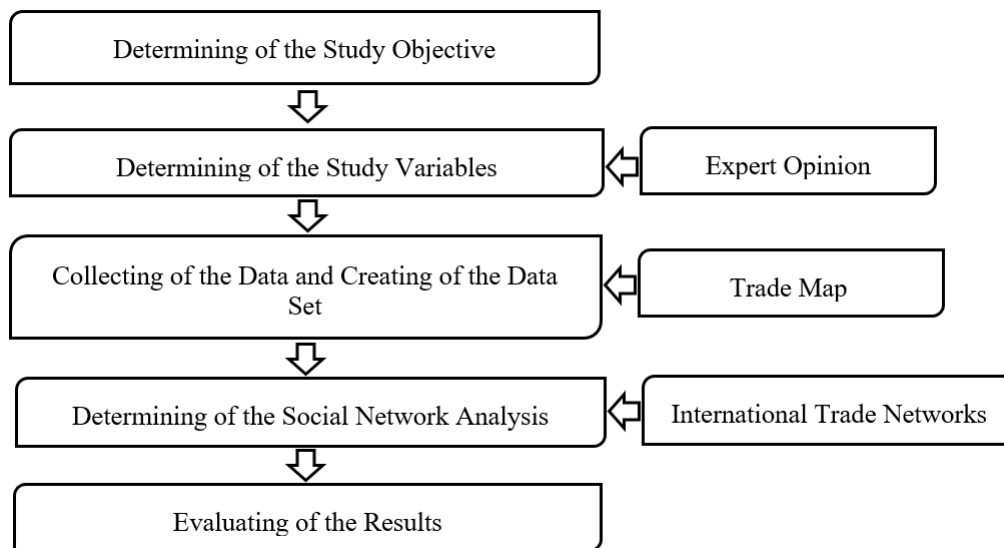


Figure 1. Methodological Framework

The 21st century has witnessed the emergence of new economies structured around data, information and knowledge flows. In parallel, social networks have become more efficient as a form of organization of individuals, groups, organizations and related systems. In this context, social networks consist of nodes of individuals, groups, organizations, and related systems connected to one or more types of interdependencies. These nodes include many different topics, such as shared values, visions, ideas, social connections, financial exchanges, trade, and joint membership in organizations (Serrat, 2017: 39-40).

The term social network was first used by anthropologist Barnes to study relationships between people living in Norway (Barnes, 1954: 39-40). In his research, Barnes expressed social interactions as a cluster of points combined with the lines to create the total network form of the relations (Can & Alatas, 2019: 3). Although social network analysis was first considered within the field of sociology, it is an interdisciplinary technique that later included many fields such as mathematics and computer science (Otte & Rousseau, 2002: 441).

Social network analysis applies the functions of graph theory to identify patterns of connections in a social structure. In this context, it aims to reflect the features of the visual image of a sociogram, using various concepts and measurements, the language of points and lines (Scott, 2012: 34-35). A graph G consists of a set V of p points together with a set X of q unordered pairs of distinct points of V . Each pair $x = \{u,v\}$ of points in X is a line of C , and x is supposed to join u and v . (Harary, 2018: 9).

Equation (1) is the overall graph representation.

$$G = (V, X) \tag{1}$$

where; V is the node (point, vertex) set and X is the edge (line, arc) set.

In the international trade network structure, countries represent nodes and edges represent trade relations between countries (Howell, 2013: 6). Visualizing a network of trade flows provides a significant advantage as it shows the interconnectedness of countries in the network and the structure of the network. Therefore, the application of social network analysis to international trade can play a complementary role to other empirical analyzes of trade (Benedictis & Tajoli, 2011: 4-5).

In the study, an export network with directed ties was created. This export network has the feature of an ego-centered network matrix. Ego-centric network shows an actor's social contacts and relationships within the network (O'Malley et al., 2012: 1). Social networks have a dynamic structure. In this context, the characteristics of a network's nodes and links change over time. Ego-centric analysis of dynamic networks aims to discover the temporal changes of a subnetwork around a particular actor (Zhao et al., 2016: 5003).

In the analysis, the Hyperlink Induced Subject Search (HITS) algorithm was used for the created export network. The HITS algorithm was designed by Kleinberg (1999) to rate the importance of a node in a directed network

using authority and hub centrality values (Kleinberg, 1999: 611). In a network, authority and hub centrality values follow a parallel course (Deguchi et al., 2014: 2). A detailed explanation of the authority and hub centrality measures is given below.

A component of a graph is a subset with the property that there is a path between one node and any other. If the all graph forms a single component, it is concluded that the nodes are fully connected to each other (Otte and Rousseau, 2002: 442). There are many measures in the literature that show the structure of networks and the role played by nodes within the network. However, only the measurements used in the study are described below.

- **Density:**

In social network research, it is necessary to examine the weak and strong ties between actors in the network in order to obtain new information (Borgatti & Cross, 2003: 434). The density of the social network has a significant impact on the way information is transmitted between actors within the network (Anastasiu et al., 2023: 5). The density of ingroup relations stands out as an indicator of structural cohesion in terms of the network (Friedkin, 1981: 41). Determining the roles of the actors in the group using social network analysis is important in terms of examining the impact of the roles on the network structures (Ergün & Koçak Usluel, 2016: 36).

The density is determined by the frequency of interactions of actors within the network. The density of a network is the ratio of the number of ties it has to the total number of possible ties in the network (Faust, 2006: 193). This ratio is shown in equation (2).

$$Density = \frac{Number\ of\ ties}{Probable\ ties} \quad (2)$$

- **Centrality:**

Social network refers to the connection of individuals or groups to each other through various relationships. The concept of centrality describes the key node or the most influential node within a network. Therefore, measuring centrality has a very important role in network research (Das et al., 2018: 1). There are many centrality measures for networks. The centrality measurements used in the study below are explained as degree centrality, hub and authority centrality and eigenvector centrality.

The simplest centrality measure in a network is the degree of a node, that is, the number of edges connected to it. In social network research, the concept of degree centrality is used as a measure of degree centrality. Directed networks have both in-degree and out-degree, and both may be useful as measures of centrality when necessary (Newman, 2010: 169). The degree k_i of a node i is $k_i = \sum_{j=1}^n A_{ij}$ and is shown in equation (3).

$$k_i = \sum_{j=1}^n A_{ij} \quad (3)$$

The higher the degree centrality value in a network, the more centrality of node i increases.

Eigenvector centrality is a measure of centrality that calculates the centrality of an actor by considering the centrality of its connections as well as the connections it has (Iacobucci et al., 2017: 1). Eigenvector centrality weights not only direct connections but also indirect connections. In this way, eigenvector centrality provides a systemic and overview of a node's role (Laporta et al., 2018: 2). In eigenvector centrality, the centrality of a node increases more with a connection to an important node compared to a connection to a less important node (Bonacich, 2007: 564).

The eigenvector centrality measure is shown in equation (4).

$$\sigma_E(i) = \frac{1}{\lambda_{max}(A)} \sum_{j=1}^n a_{ji} v_j \quad (4)$$

In equation (3), the vector $v = (v_1, \dots, v_n)^T$ represents the eigenvector of A .

Hub and authority centrality was first designed as a web-page rating algorithm. Authorities are nodes with useful information. On the other hand, hubs are nodes that provide information on where the best authorities are (Park et al., 2020: 5). Hub and authority centrality are metrics used in directed networks, and they are often calculated together. They may be expressed as a mix of in-degree/out-degree centrality and eigenvector centrality (Morselli et al., 2013: 2). Hub and authority centrality measurements are obtained by normalizing the eigenvector centrality. Eigenvector centrality calculates the influence of a node in the network and distributes relative scores across all nodes (Jeon et al., 2019: 261-262). If the relevant node is connected to nodes with high metrics in the network, hub and authority centrality metrics will increase even more (Esteve-Pérez et al., 2022: 7-8).

The authority centrality of a node is formulated to be proportional to the sum of the hub centralities of the nodes connected to that node (Newman, 2010: 179):

$$x_i = \alpha \sum_j A_{ij} y_j \quad (5)$$

In equation (5), α is a constant. Similarly, the hub centrality of a node is proportional to the sum of the authority centralities of the nodes it is connected to (Newman, 2010: 180):

$$y_i = \beta \sum_j A_{ji} x_j \quad (6)$$

where β is another constant. In the second equation, the indices on the A_{ji} matrix element are replaced. Equations (5) and (6) may be represented in matrix terms as follows (Newman, 2010: 180):

$$x = \alpha A y \quad (7)$$

$$y = \beta A^T x \quad (8)$$

or can be shown as follows by combining equations (7) and (8) (Newman, 2010: 180):

$$A A^T x = \lambda x \quad (9)$$

$$A^T A y = \lambda y \quad (10)$$

where $\lambda = (\alpha\beta)^{-1}$. In Equations (9) and (10), the hub and authority centralities are respectively obtained by the eigenvectors of $A A^T$ and $A^T A$ with the same eigenvalue.

4. ANALYSIS AND FINDINGS

Free trade agreements made between countries have the power to change the trade balances in the world and, as a result, affect the welfare and development level of countries. The fact that RCEP is the world's largest free trade agreement in terms of the GDP of its member countries and the first multilateral agreement involving China are the factors that make this research important.

In this research, only product trade of RCEP countries was taken a basis and export data for the 2012-2021 period was collected from Trade Map. Social network analyses were conducted using the Ucinet program for three-year periods, based on the years 2012, 2015, 2018 and 2021. On the other hand, the Gephi program was used to visualize the networks. A 15X15 matrix was created for product export data in dollar terms of the countries subject to analysis. While making network visualizations, a \$1,000,000 constraint was used for the data in the matrix. The data were analyzed according to density, degree and centrality characteristics. Nodes are colored according to their degrees and networks are colored according to their weights. The sizes of the nodes were sized according to their eigenvector centrality and the network map view was created by selecting the Fruchterman-Reingold algorithm.

The Fruchterman-Reingold algorithm was developed for visualizing directed networks (Fruchterman and Reingold 1991: 1129-1164). According to the algorithm, initially the nodes are ring-shaped. However, two forces are then calculated: attractive force and repulsive force. While the attractive force captures the connected nodes between the nodes, the repulsive force repels the unrelated nodes. This process continues iteratively in the algorithm (Jalel et al., 2021: 2990-2991).

Figure 2 shows the network diagrams of trade between RCEP countries. The degree of closeness between countries may be explained by the density of trade networks in network analysis. The higher the trade relations between countries, the higher their network density. In this context, it is seen that China, which has been the hub and authority country for four years, has the most two relations with Japan and South Korea. The thickness of the lines between these three countries in the diagrams shows intense trade links.

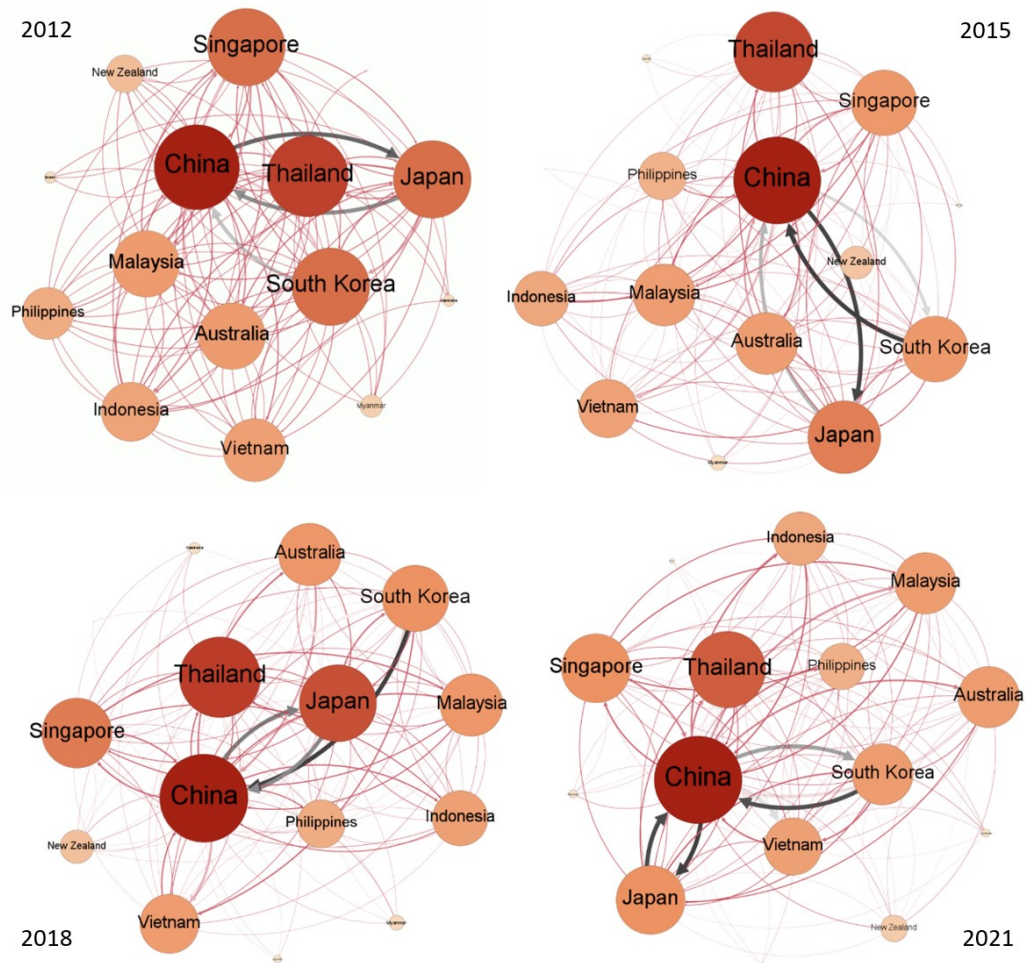


Figure 2. Network Diagrams of 2012, 2015, 2018 and 2021

In 2012, it is seen that China, Japan and South Korea have more export relations than other countries. The fact that the arrows are bidirectional in the network is an indication that this relationship is reciprocal. On the other hand, apart from these three countries, Thailand and Singapore stand out with the abundance of network connections they have.

In 2015, the countries at the center of the network were China, Japan, South Korea and Thailand. This year, compared to 2012, the trade relationship between China and South Korea has increased mutually. It is possible to comment that commercial ties between China and South Korea strengthened during this period. The country to which China exports the most is again Japan.

In 2018, the countries at the center of the network (China, Japan, South Korea and Thailand) remained unchanged. It can be seen in the diagram that network density increased more from South Korea to China this year. In this context, China's imports from South Korea have increased compared to other years.

In 2021, China, Japan, South Korea and Thailand form the center of the network. In addition, it is understood from their positions and number of connections in the network that Australia and Vietnam have increased their centrality. On the other hand, it can be said that China has dominated the network by increasing its influence in the network. This year, it was observed that China exported the most to Japan, Vietnam and South Korea.

Table 2 shows the basic ego network indicators (size, ties, pairs and density) created based on the product trade of RCEP countries with each other for the years 2012, 2015, 2018 and 2021. When the table is examined, it is seen that in 2012, the ego-network size of all countries except Brunei (13) and the Philippines (13) was 14. This is due to the fact that Laos did not export to Brunei and the Philippines in 2012. In this context, countries except Brunei and the Philippines have export relations with each other. On the other hand, it is noteworthy that the ties and pairs values of Brunei and the Philippines are lower. The ratio of the number of existing ties in the network to the highest possible number of ties is expressed as the density value. In the table, the density value for Laos, Brunei and the Philippines, which do not have any export relations, is 100, while this value is 98.90 for other countries.

In 2015, since all countries have trade with each other, the ego network size value was found to be 14, and also the number of existing ties and the number of possible ties were equal to 182. In this context, it can be said that communication and information exchange within the network was quite strong in 2015.

In 2018, since Laos did not export to Brunei, Brunei's ego network size appears to be 13. Depending on this situation, ties and pairs values were found to be 156 for Brunei, 182 for Laos and 181 for other countries. Density values are 100 for Laos and Brunei and 99.45 for other countries. In 2021, in contrast to 2018, Laos has no exports to Brunei, and therefore the network ego size for Laos is 13.

Table 2. Basic Ego Network Indicator Values of RCEP Countries (2012, 2015, 2018 and 2021)

2012		1	2	3	4	2015		1	2	3	4
		Size	Ties	Pairs	Density			Size	Ties	Pairs	Density
1	Australia	14.00	180.00	182.00	98.90	1	Australia	14.00	182.00	182.00	100.00
2	Brunei	13.00	156.00	156.00	100.00	2	Brunei	14.00	182.00	182.00	100.00
3	China	14.00	180.00	182.00	98.90	3	China	14.00	182.00	182.00	100.00
4	Indonesia	14.00	180.00	182.00	98.90	4	Indonesia	14.00	182.00	182.00	100.00
5	Philippines	13.00	156.00	156.00	100.00	5	Philippines	14.00	182.00	182.00	100.00
6	South Korea	14.00	180.00	182.00	98.90	6	South Korea	14.00	182.00	182.00	100.00
7	Japan	14.00	180.00	182.00	98.90	7	Japan	14.00	182.00	182.00	100.00
8	Cambodia	14.00	180.00	182.00	98.90	8	Cambodia	14.00	182.00	182.00	100.00
9	Laos	14.00	182.00	182.00	100.00	9	Laos	14.00	182.00	182.00	100.00
10	Malaysia	14.00	180.00	182.00	98.90	10	Malaysia	14.00	182.00	182.00	100.00
11	Myanmar	14.00	180.00	182.00	98.90	11	Myanmar	14.00	182.00	182.00	100.00
12	Singapore	14.00	180.00	182.00	98.90	12	Singapore	14.00	182.00	182.00	100.00
13	Thailand	14.00	180.00	182.00	98.90	13	Thailand	14.00	182.00	182.00	100.00
14	Vietnam	14.00	180.00	182.00	98.90	14	Vietnam	14.00	182.00	182.00	100.00
15	New Zealand	14.00	180.00	182.00	98.90	15	New Zealand	14.00	182.00	182.00	100.00

2018		1	2	3	4	2021		1	2	3	4
		Size	Ties	Pairs	Density			Size	Ties	Pairs	Density
1	Australia	14.00	181.00	182.00	99.45	1	Australia	14.00	181.00	182.00	99.45
2	Brunei	13.00	156.00	156.00	100.00	2	Brunei	14.00	182.00	182.00	100.00
3	China	14.00	181.00	182.00	99.45	3	China	14.00	181.00	182.00	99.45
4	Indonesia	14.00	181.00	182.00	99.45	4	Indonesia	14.00	181.00	182.00	99.45
5	Philippines	14.00	181.00	182.00	99.45	5	Philippines	14.00	181.00	182.00	99.45
6	South Korea	14.00	181.00	182.00	99.45	6	South Korea	14.00	181.00	182.00	99.45
7	Japan	14.00	181.00	182.00	99.45	7	Japan	14.00	181.00	182.00	99.45
8	Cambodia	14.00	181.00	182.00	99.45	8	Cambodia	14.00	181.00	182.00	99.45
9	Laos	14.00	182.00	182.00	100.00	9	Laos	13.00	156.00	156.00	100.00
10	Malaysia	14.00	181.00	182.00	99.45	10	Malaysia	14.00	181.00	182.00	99.45
11	Myanmar	14.00	181.00	182.00	99.45	11	Myanmar	14.00	181.00	182.00	99.45
12	Singapore	14.00	181.00	182.00	99.45	12	Singapore	14.00	181.00	182.00	99.45
13	Thailand	14.00	181.00	182.00	99.45	13	Thailand	14.00	181.00	182.00	99.45
14	Vietnam	14.00	181.00	182.00	99.45	14	Vietnam	14.00	181.00	182.00	99.45
15	New Zealand	14.00	181.00	182.00	99.45	15	New Zealand	14.00	181.00	182.00	99.45

Table 3 shows the degree centrality values of RCEP countries for the years 2012, 2015, 2018 and 2021. In the table, the number of connections to which a country exports is shown by the out-degree parameter, while the in-degree parameter represents the number of connections that export to that country. When the table is examined, it is seen that China has the highest both out-degree and in-degree parameters in all four years. On the other hand, in 2012, while China's out-degree parameter was lower than the in-degree parameter, in the following period, the number of connections China exported increased while the number of connections it imported decreased.

Similarly, in terms of both out-degree and in-degree parameters for four years, Japan ranks second and South Korea ranks third. Except for 2012, the number of connections Japan exports is also higher. South Korea's out-degree parameter is higher than the in-degree parameter in all four years. In this process, while both out-degree and in-degree parameters of Vietnam increased, the increase in the number of import connections is especially noteworthy.

Table 3. Degree Centrality Values of RCEP Countries (2012, 2015, 2018 and 2021)

2012		1		2		2015		1		2	
		Outdeg		Indeg				Outdeg		Indeg	
1	Australia	163143440.000	119585592.000	1	Australia	113485720.000	105633328.000				
2	Brunei	11671897.000	3818027.000	2	Brunei	5182489.000	3543571.000				
3	China	485173888.000	500702688.000	3	China	561586944.000	450379776.000				
4	Indonesia	113625096.000	142523872.000	4	Indonesia	78397824.000	105164760.000				
5	Philippines	29143108.000	59457988.000	5	Philippines	30319952.000	67875544.000				
6	South Korea	262970416.000	225651728.000	6	South Korea	249699408.000	203953696.000				
7	Japan	355482144.000	357709536.000	7	Japan	263367792.000	285939904.000				
8	Cambodia	987076.000	13007335.000	8	Cambodia	1974136.000	13696900.000				
9	Laos	1493421.000	5380017.000	9	Laos	2677312.000	6313078.000				
10	Malaysia	135460016.000	148864848.000	10	Malaysia	116412472.000	128110896.000				
11	Myanmar	5357537.000	14077259.000	11	Myanmar	9504015.000	19668592.000				
12	Singapore	231793296.000	161630656.000	12	Singapore	193304432.000	150711840.000				
13	Thailand	122697936.000	132412824.000	13	Thailand	112441600.000	117814760.000				
14	Vietnam	52300636.000	87515984.000	14	Vietnam	61009124.000	139322752.000				
15	New Zealand	20968496.000	19930036.000	15	New Zealand	18406462.000	19640400.000				
2018		1		2		2021		1		2	
		Outdeg		Indeg				Outdeg		Indeg	
1	Australia	145375744.000	119498744.000	1	Australia	209355232.000	139163728.000				
2	Brunei	5509586.000	3429832.000	2	Brunei	9770511.000	3839924.000				
3	China	630268608.000	589999680.000	3	China	873144896.000	738554688.000				
4	Indonesia	101578208.000	128216480.000	4	Indonesia	132569600.000	142383776.000				
5	Philippines	31989492.000	90931368.000	5	Philippines	37567044.000	116014184.000				
6	South Korea	304341344.000	236801984.000	6	South Korea	313498976.000	293468352.000				
7	Japan	330699904.000	320924672.000	7	Japan	348332128.000	342360128.000				
8	Cambodia	3209477.000	24290028.000	8	Cambodia	4197410.000	32446080.000				
9	Laos	5364981.000	6451401.000	9	Laos	5363433.000	6520922.000				
10	Malaysia	140137072.000	146813936.000	10	Malaysia	166119952.000	182517920.000				
11	Myanmar	11634824.000	21619294.000	11	Myanmar	10272046.000	20537666.000				
12	Singapore	222984656.000	156188208.000	12	Singapore	242654432.000	171603088.000				
13	Thailand	139380032.000	140536112.000	13	Thailand	143891344.000	167430224.000				
14	Vietnam	107545024.000	193670464.000	14	Vietnam	131911640.000	270518976.000				
15	New Zealand	22805330.000	23452192.000	15	New Zealand	27369992.000	28658856.000				

Table 4 shows the hub and authority centrality values of RCEP countries for the years 2012, 2015, 2018 and 2021. A node in the network with many outgoing export connections is called a hub, and a node with incoming export connections is called an authority. In 2012, the three countries with the highest hub centrality were Japan (0.535), China (0.516) and South Korea (0.458), while the three countries with the highest authority centrality were China (0.683), Japan (0.463) and South Korea (0.344). In this context, in 2012, the country with the highest total number of connections for hub and authority centrality was China.

In 2015, the three countries with the highest hub centrality were China (0.692), South Korea (0.433) and Japan (0.402), while the three countries with the highest authority centrality were China (0.555), Japan (0.496) and South Korea (0.392). In this context, in 2015, the country with the highest total number of connections for hub and authority centrality was again China.

In 2018, there is a similar situation to 2015 for both hub centrality (China (0.569), South Korea (0.496) and Japan (0.472)) and authority centrality (China (0.674), Japan (0.415) and South Korea (0.339)). In 2021, the top three country rankings for both hub centrality (China (0.710), Japan (0.387) and South Korea (0.377)) and authority centrality (China (0.553), Japan (0.425) and South Korea (0.397)) are the same.

Table 4. Hub and Authority Centrality Values of RCEP Countries (2012, 2015, 2018 and 2021)

2012		1		2		2015		1		2	
		Hub		Authority				Hub		Authority	
1	Australia	0.291	0.156	1	Australia	0.203	0.177				
2	Brunei	0.015	0.005	2	Brunei	0.008	0.006				
3	China	0.516	0.683	3	China	0.692	0.555				
4	Indonesia	0.156	0.189	4	Indonesia	0.112	0.170				
5	Philippines	0.043	0.085	5	Philippines	0.051	0.120				
6	South Korea	0.458	0.344	6	South Korea	0.433	0.392				
7	Japan	0.535	0.463	7	Japan	0.402	0.496				
8	Cambodia	0.001	0.012	8	Cambodia	0.003	0.017				
9	Laos	0.001	0.005	9	Laos	0.004	0.007				
10	Malaysia	0.176	0.186	10	Malaysia	0.160	0.207				
11	Myanmar	0.007	0.019	11	Myanmar	0.015	0.035				
12	Singapore	0.258	0.207	12	Singapore	0.247	0.241				

13	Thailand	0.149	0.193	13	Thailand	0.141	0.191
14	Vietnam	0.073	0.132	14	Vietnam	0.093	0.277
15	New Zealand	0.027	0.025	15	New Zealand	0.026	0.028
2018		1	2	2021		1	2
		Hub	Authority			Hub	Authority
1	Australia	0.238	0.160	1	Australia	0.258	0.177
2	Brunei	0.006	0.004	2	Brunei	0.009	0.003
3	China	0.569	0.674	3	China	0.710	0.553
4	Indonesia	0.128	0.165	4	Indonesia	0.143	0.175
5	Philippines	0.043	0.125	5	Philippines	0.041	0.152
6	South Korea	0.496	0.339	6	South Korea	0.377	0.397
7	Japan	0.472	0.415	7	Japan	0.387	0.425
8	Cambodia	0.004	0.024	8	Cambodia	0.005	0.033
9	Laos	0.006	0.006	9	Laos	0.005	0.005
10	Malaysia	0.162	0.178	10	Malaysia	0.154	0.223
11	Myanmar	0.018	0.028	11	Myanmar	0.011	0.026
12	Singapore	0.240	0.189	12	Singapore	0.224	0.180
13	Thailand	0.150	0.180	13	Thailand	0.130	0.206
14	Vietnam	0.156	0.296	14	Vietnam	0.149	0.379
15	New Zealand	0.032	0.028	15	New Zealand	0.031	0.031

Table 5 gives the eigenvector values of product exports of RCEP countries for the years 2012, 2015, 2018 and 2021. The eigenvector centrality measure indicates a country's neighborhood relationship with other countries with which it has important connections. If countries with high eigenvector centrality values are removed from the network, other countries in the network may be affected by this situation and the structure of the network may change. When Table 5 is examined, it is seen that China's eigenvector centrality was the highest in all four years. Japan ranks second and South Korea ranks third. On the other hand, it is seen that the eigenvector centrality values of Vietnam, Cambodia and the Philippines are gradually increasing, and the increase in the eigenvector centrality value of Vietnam is noteworthy.

Table 5. Eigenvector Values of RCEP Countries (2012, 2015, 2018 and 2021)

	2012	2015	2018	2021
Australia	0.254	0.195	0.210	0.251
Brunei	0.017	0.010	0.008	0.009
China	0.590	0.621	0.616	0.628
Indonesia	0.186	0.152	0.155	0.154
Philippines	0.076	0.104	0.112	0.126
South Korea	0.413	0.420	0.436	0.381
Japan	0.486	0.440	0.421	0.382
Cambodia	0.012	0.016	0.024	0.030
Laos	0.005	0.006	0.006	0.006
Malaysia	0.187	0.186	0.169	0.194
Myanmar	0.018	0.029	0.027	0.022
Singapore	0.238	0.234	0.208	0.203
Thailand	0.178	0.173	0.172	0.182
Vietnam	0.126	0.227	0.264	0.311
New Zealand	0.027	0.026	0.031	0.035

5. CONCLUSION

With the globalization of the world, trade networks have intensified and this has brought about various economic integration practices. Especially in the last century, countries that want to increase their commercial activities and dominance have effectively used free trade agreements, which are a result of global competition. Free trade agreements eliminate tariffs, quotas, and other barriers to specific groups of goods or services traded between countries that are parties to the agreement. Free trade agreements create effects that facilitate trade for the parties and at the same time increase the level of economic income and welfare.

On the other hand, free trade agreements may have a great impact on world trade by removing practices that hinder trade between countries. The RCEP agreement, which is the subject of the study, is the world's most comprehensive free trade agreement in terms of global trade and GDP. In the study, an attempt was made to establish a relationship between the changes in the trade network of RCEP countries, centrality criteria and the roles of the agreement actors in three-year periods (2012, 2015, 2018 and 2021).

In the analysis results, it was observed that China ranked first in all centrality measurements in trade between RCEP countries for four years. During this period, China's most important trade partners were Japan and South

Korea. Apart from these three countries, it has been determined that the countries that attract the most attention in terms of centrality measurements within the group are Australia, Singapore, Indonesia, Malaysia and Thailand. On the other hand, Vietnam came to the fore with the development of its trade in this period, and it was determined that Vietnam's most important trade partner was China. This finding emphasizes the importance of trade relations with the country that plays a key role in the network (China).

The scope of this study is limited to commercial relations between RCEP countries. However, in future studies on the subject, trade between RCEP countries and Türkiye may be examined and the impact of the agreement on Türkiye may be evaluated. Or, trade between India and RCEP countries, which withdrew from the agreement at the last minute, may be examined and the impact of the agreement on India may be evaluated.

AUTHORS' DECLARATION

This paper complies with Research and Publication Ethics, has no conflict of interest to declare, and has received no financial support.

AUTHORS' CONTRIBUTIONS

Conceptualization, writing-original draft, editing – **FGA** and **MY**, data collection, methodology, formal analysis – **FGA** and **MY**, Final Approval and Accountability – **FGA**

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A Research on the Effect of Organizational Learning and Critical Thinking on Intrapreneurship

Örgütsel Öğrenme ve Eleştirel Düşünmenin İç Girişimciliğe Etkisi Üzerine Bir Araştırma

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ABSTRACT

In order for businesses to survive in a competitive environment and adapt to changing environmental conditions, the learning element is inevitable in order to constantly produce innovative and creative ideas. While trying to respond to this change through learning, thanks to the critical thinking of the employees, work processes that prevent change is determined. Organizational learning leads businesses to understand themselves and their environment by improving the critical thinking abilities of the employees and ensures success in the competitive environment by revealing the intrapreneurial abilities of the employees. The aim of this study is to determine whether organizational learning activity and critical thinking skills have an impact on the intrapreneurship tendencies of employees. Within the scope of the study, a questionnaire was applied to the employees working in the textile and automotive sectors operating in the Marmara Region. The obtained data were analyzed with the help of the SPSS statistical program and the LISREL structural equation program. According to the results of the structural equation model, it has been determined that organizational learning and critical thinking have a significant and positive effect on intrapreneurship. Accordingly, the increase in organizational learning and critical thinking levels leads to a positive increase in the intrapreneurship levels of the employees.

Keywords:

Organizational Learning,

Critical Thinking,

Intrapreneurship

Jel Codes:

C20, D2, M10

ÖZET

İşletmelerin rekabet ortamında ayakta kalabilmeleri ve değişen çevre koşullarına uyum sağlayabilmeleri için sürekli yenilikçi ve yaratıcı fikirler üretebilmeleri için öğrenme unsuru kaçınılmazdır. Bu değişime, öğrenme ile cevap vermeye çalışırken, çalışanların eleştirel düşünme yetenekleri ile değişimi engelleyen iş süreçleri saptanabilmektedir. Örgütsel öğrenme, çalışanların eleştirel düşünme yeteneklerini geliştirerek işletmelerin kendilerini ve çevresini anlamasına yol açarak ve aynı zamanda çalışanların iç girişimcilik yeteneklerini ortaya çıkararak rekabet ortamında başarılı olmaları sağlanabilmektedir. Bu çalışmanın amacı, örgütsel öğrenme etkinliği ve eleştirel düşünme becerilerinin, çalışanların iç girişimcilik eğilimleri üzerinde bir etkisinin olup olmadığını belirlemektir. Çalışma kapsamında Marmara Bölgesi'nde faaliyet gösteren tekstil ve otomotiv sektörlerinde görev yapan çalışanlara anket uygulanmıştır. Elde edilen veriler SPSS istatistik programı ve LISREL yapısal eşitlik programı yardımıyla analiz edilmiştir. Yapısal eşitlik modeli sonucuna göre örgütsel öğrenme ve eleştirel düşünmenin iç girişimcilik üzerinde anlamlı ve pozitif bir etkiye sahip olduğu tespit edilmiştir. Buna göre örgütsel öğrenme ve eleştirel düşünme düzeylerindeki artış, çalışanların iç girişimcilik düzeylerinde olumlu artışa yol açmaktadır.

Anahtar Kelimeler:

Örgütsel Öğrenme,

Eleştirel Düşünme,

İç Girişimcilik

Jel Kodları:

C02 C30 C44

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1. INTRODUCTION

Today, the environmental conditions in which businesses operate are rapidly changing and becoming complex and uncertain. This change is happening faster than the changes in the past, forcing businesses to change their working styles and structures, and knowledge and expertise in any subject become insufficient in a short time. In the ever-changing business environment, “learning” comes to the fore as one of the necessary elements for organizations to be successful. Thanks to organizational learning, the people working together to achieve a common goal in the organization develop the skills necessary to better understand their work and ultimately be more effective, and acquire new and useful information. Organizational learning starts from the individual level and extends to group learning and then to the learning of the organization as a whole. In this way, an environment is created in which the members of the organization bring together the data obtained from various sources, develop the shared information and make it available to the members of the organization again. Along with this learned knowledge, employees' ability to manage the change in the environment and adapt to this change is developed by revealing their ability to think critically about their jobs. Critical thinking is a way of thinking that consists of mental processes such as reasoning, analysis and evaluation. In the business life of this age, it is necessary to catch the change and even to prevent the change. This change requires organizations to constantly develop new, different and creative ideas. For this, organizations find and employ employees with high entrepreneurial characteristics or create an organizational environment that supports the intrapreneurship activities of their already working employees. The entrepreneurial characteristics of the employees in the organization make it easier for the organization to cope with this change. An intrapreneur is an employee who engages in creative, innovative, change and development activities in an existing organization. For this, it is necessary to question, criticize, change or reject previously accepted ideas and practices in order to be able to innovate on an issue in the organization. Organizational learning, critical thinking of employees and the existence of intrapreneurship activities are important criteria for success in all organizations that operate to exist and survive in today's competitive environment, the main element of which is human. Continuous learning, critical thinking skills of employees and intrapreneurship potentials should be encouraged for businesses to achieve determined success in the rapidly changing environment. For this, it is necessary to make a difference by spreading the learning to the level of the organization, improving the critical thinking skills of the employees and revealing the intrapreneurship tendencies. This gives organizations a competitive advantage. In order to adapt to rapidly changing environmental conditions and to ensure the continuity of the organization, organizations need continuous learning, dissemination of learned information to the organizational level, critical thinking of employees and employees with entrepreneurial characteristics in the organization. In this respect, in this study, organizational learning, critical thinking and intrapreneurship were discussed and research was conducted.

Organizations need to encourage their employees to learn in order to sustain their existence in today's competitive environment and to achieve success by adapting to the environment of rapid change (Kuabara & Takahashi, 2017: 173-174). With the knowledge they have acquired, workers can also manipulate the changes that take place around them and develop their skills to adapt to these changes with their critical thinking abilities. Critical thinking is a way of thinking that involves the processes of reasoning, analysis, and evaluation. Critical thinking is challenging an idea. Therefore, it consists of actions of questioning, finding answers, and asking further questions (Moon, 2008: 20). Entrepreneurial characteristics of workers in an organization can help ease the management of changes on the organizational level. An intrapreneur is a worker in an existing organization that is involved in creative, innovative, transformative, and constructive activities (Ramachandran et al., 2006: 86). Intrapreneurship is a concept that is used for a number of purposes such as obtaining information for profit, strategic renovation, innovativeness, international success, and the effective use of resources, and is considered to be one of the ways of gaining a competitive edge (Kuratko, 2007: 152). While organizations try to respond to changes in the environment with learning, they can also detect the existing work processes that hinder adaptation to change with the help of critical thinking. Organizational learning helps workers develop critical thinking skills that allow businesses to understand themselves and their surroundings, as well as bring out the entrepreneurial skills of their workers which lead to success in a competitive environment.

2. LITERATURE REVIEW

2.1. Learning and Organizational Learning

Today, organizations are constantly in the process of learning. Learning is critical for the survival of an organization in a time of rapid change. It is of utmost importance for organizations to learn from their environments, adapt to new and ever-changing data, and learn to take lessons from an uncertain and unforeseeable

future (Gill, 2000: 1-2). Globalization, developing technologies, and uncertainties are some of the factors which put pressure on organizations in a competitive environment (Retna, 2007: 127). With organizational learning, employees are in a constant state of creating, obtaining, and relaying information, which helps businesses adapt to environmental changes quicker than their rivals (Sarder, 2016: 1). Although it is defined as the process of reformative actions with the use of more advanced information, the concept of organizational learning can be broadened to include individuals that are outside of the official borders of an organization, such as unofficial groups, customers, suppliers, colleagues, and other individuals who do not share the organizational mission of the company yet may still contribute to the learning processes of the organization (Kozlowski & Salas, 2010: 366). On the whole, organizational learning is defined as the process by which organizations learn (Kuabara & Takahashi, 2017: 173). Organizational learning entails the shift from the individual to the organizational level, which rouses the desire to come up with new ideas to increase organizational efficiency (George & Jones, 2012: 148).

2.2. Thinking and Critical Thinking

Nowadays, it is difficult to imagine a field where thinking skills are not needed. By tradition, one ought to be capable of thinking in order to participate in activities such as learning, remembering, decision-making, debating, analyzing, and problem-solving. Existing knowledge is used to make sense of new information. Thus, gaining knowledge involves an active cognitive process (Halpern, 2014: 5-7). Thinking must be directed towards an objective and must involve processes such as problem-solving, formulation, calculation, and conclusion (Moore, 2007: 2-13). Thinking may be defined as a potential activity of the brain. What is expressed in human communication is the conclusion of thought. Communication can be done in a number of ways such as language, speech, writing, images, and so on (Kirby et al., 1999: 5-6). Critical thinking is a process in which mental capabilities are conceptualized, applied, analyzed, and interpreted, as well as the process of developing knowledge that is gained through observation, experience, reaction, causation, or communication (Colakoglu & Sledge, 2013: 117). In other words, it is a way of thinking that is reasoned and target-oriented. It is used in problem-solving, formulation, deduction, probability calculation, and decision-making practices (Bell & Loon, 2015: 362). As problems become more difficult and complex, their structures and natures change, information and responsibilities increase, organizational and social structures grow, the need for new members arise in teams, and the necessity for independent thinking grows as critical thinking gains prominence (Cohen et al., 2002: 4-5). Who on average have strong characteristics in critical thinking have human literacy, communication, collaboration, and in being creative. When those characteristics strengthen intrapreneurship behavior, it is learned to build initiative, and creativity (Darmawan, 2023: 50).

2.3. Intrapreneurship

The notion of intrapreneurship was first introduced by Pinchot in 1985. According to Pinchot, an intrapreneur is an employee who undertakes the responsibility of implementing a business idea in an organization (Gürel, 2012: 59). An intrapreneur is a person who supports or seeks innovations and always pursues new practices (Kanai, 1992: 124). An intrapreneur is a proactive individual that strongly desires action (Jong & Wennekers, 2008: 8-9). Modern organizations become more dependent on the intrapreneurial activities of their employees in order to preserve and advance their organizational efficacy and competitiveness (Gawke et al., 2018: 508). In this context, intrapreneurship provides organizations with appropriate strategies to restructure their resources in new ways, detect opportunities, and utilize them (Kahkha et al., 2014: 9). Intrapreneurship refers to the entrepreneurial activities in an existing organization (Antoncic & Hisrich, 2001: 4970). Intrapreneurial behavior of employees mostly consists of practices such as taking initiative, risk-taking and coming up with new ideas (Parker, 2009: 2). In addition, it is the practice of taking advantage of a new opportunity and developing a new enterprise in an existing organization to create economic value (Bashir & Afzal, 2009: 7). It is defined as the process that is initiated and administered by the teams in an organization, who operate differently from the organization while utilizing and improving the presence, position, abilities, and other resources of the said organization (Wolcott & Lippitz, 2007: 75). Intrapreneurship in individuals is shown by the ownership of creative thinking, critical thinking, collaborative thinking, initiative skills, decision-making skills, and leadership skills (Rahman et al., 2022: 2). It is called as “intrapreneurship learning” in which related individual and organizational learning with intrapreneurship, apostrophizing the role of individuals as organizational agents for learning and change (Rupcic, 2020: 179).

3. METHODOLOGY

3.1. The Importance of the Research

Based on the knowledge that emerged from the literature review, it is seen that the concepts of organizational learning, critical thinking and intrapreneurship are very important for organizations. Because these concepts benefit the sustainability, continuity and competitive advantage for organizations. Therefore, in this study, the relationships between these concepts, which have critical and strategic importance for organizations, were examined. It is important to focus on organizational learning activities and critical thinking skills, which are thought to increase intrapreneurship activities in businesses. In this context, the importance of the research is to consider together the concepts of organizational learning, critical thinking and intrapreneurship, which are thought to contribute to the competitive advantage of businesses and to consider these concepts together. Because of that the learning element is inevitable for organizations in order to adapt to the changing environmental conditions and constantly produce innovative and creative ideas for businesses to survive in the competitive environment. While trying to respond to this change through learning, business processes that prevent change can be determined thanks to the critical thinking of the employees. Organizational learning activities and the development of employees' critical thinking skills lead the business to understand both itself and its environment, and it provides success in a competitive environment by revealing the entrepreneurial abilities of its employees. When the previous studies in the literature that are similar to this subject are examined, there is no study that includes the concepts of organizational learning, critical thinking and intrapreneurship, but the number of studies in which these three concepts are paired is also rare. However, according to the results of the studies on these concepts, it is seen that organizational learning, critical thinking and intrapreneurship are suitable for managerial elements, that organizations should show interest to provide competitive advantage, that productivity will increase by raising awareness of employees on these issues, and that these concepts have begun to be taken into account as current concepts in businesses.

3.2. The Scales and the Model of the Research

This study aims to determine the effect of organizational learning and critical thinking skills on the intrapreneurial skills of workers. The population of this study consists of textile and automotive industries in the Marmara Region in Turkey. In this context, in August and November 2018, 373 workers from the textile sector and 339 workers from the automotive sector were involved in a survey study. The sample of this study consists of a total of 712 workers. In the scope of this study, the survey form given to workers involves questions regarding organizational learning, critical thinking, and intrapreneurship. For organizational learning, the scale developed by Calantone, Cavusgil, and Zhao (2002) and adapted to Turkish by Avcı (2005) was used. For critical thinking, the scale developed by UF-EMI (University of Florida Engagement, Maturity and Innovativeness, 2007) and adapted to Turkish by Ertaş (2012) was used. For the intrapreneurship section, the scale developed by Şeşen (2010) was utilized. With the decision numbered 06/01 on 22.06.2018, the ethics committee permission required for the study was obtained.

In the model developed to determine the effect of organizational learning and critical thinking on intrapreneurship, organizational learning and critical thinking are the independent variables and intrapreneurship is the dependent variable. According to this model, organizational learning practices and critical thinking skills are discussed in tandem in order to determine the level of influence and the direction of their relation to the intrapreneurial capabilities of workers.

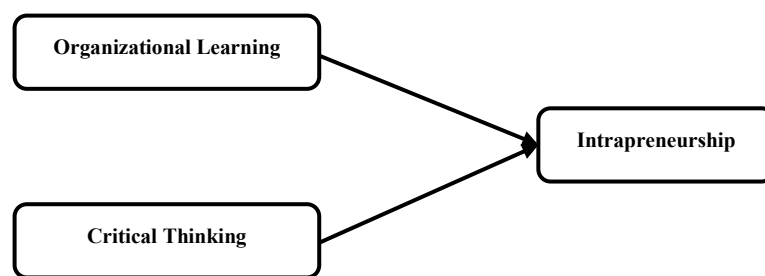


Figure 1. Conceptual Model

According to this model, the hypothesis of the research was determined as follows: “Organizational learning and critical thinking have a significant effect on intrapreneurship.” In order to test this hypothesis, the data collected in this study were analyzed with the SPSS and LISREL programs. In this context, explanatory and confirmatory factor analyses, reliability analyses of the scales and their sub-dimensions, normality test, and structural equation modeling were implemented.

3.3. Factor Analyses and Reliability Analyses of the Scales

The results of the exploratory factor analysis of the research are stated as follows. The organizational learning scale was grouped under the three following factors: “intra-organizational information sharing,” “the shared vision,” and “determination to learn.” (KMO value 0,951). The critical thinking scale was grouped under the three following factors: “cognitive maturity,” “innovativeness,” and “engagement.” (KMO value 0,972). The intrapreneurship scale was grouped under the three following factors: “risk-taking,” “individual networking,” and “autonomy.” (KMO value 0,951). According to the confirmatory factor analysis, the coefficient of each item in terms of the factors they belong to was found to be at a high level, and all of the t-values were found to be significant on the level of 0.01 (t-values > 2.576) (Şimşek, 2007: 86). Then, reliability analysis was applied to the scales used in the research.

Table 1. Reliability analysis of the scales

	N of Items	Cronbach's Alpha
Organizational Learning	17	0,943
Critical Thinking	26	0,966
Intrapreneurship	22	0,945

It was found that the reliability value of all the scales used in the research is higher than 0.90 as seen in Table 1. Reliability analysis was also carried out for the sub-dimensions that emerged as a result of the factor analysis for the scales used.

Table 2. Reliability Analysis of the Factors

	Cronbach's Alpha	CR	AVE
Organizational Learning			
Determination to learn	0,851	0,82	0,53
Shared vision	0,872	0,82	0,49
Information sharing	0,911	0,88	0,48
Critical Thinking			
Engagement	0,870	0,83	0,50
Innovativeness	0,911	0,83	0,46
Cognitive maturity	0,949	0,91	0,41
Intrapreneurship			
Individual networking	0,891	0,87	0,53
Autonomy	0,853	0,81	0,38
Risk-taking	0,916	0,89	0,46

It was determined that all sub-dimensions of the scales used in this study have a reliability value greater than 0.80, and the joint reliability value of the factors of each scale greater than 0.80 as seen in Table 2. Fornell and Larcker (1981) state that even if the AVE value is below 0.50, the convergent validity of the construct may be sufficient if the CR value is greater than 0.60.

3.4. The Testing of the Research Model

Before the structural equation modeling, the multivariate normality test was conducted on the data to determine the estimation method.

Table 3. Mardia multivariate normality test

Skewness			Kurtosis		
Value	Z-Score	p-Value	Value	Z-Score	p-Value
16.553	35.006	0.000	158.267	22.936	0.000
Skewness and Kurtosis					
				χ^2	p-Value
				1751.528	0.000

It was found that the data distribution was non-normal as the p values obtained as a result of this test were below 0.05 (p 0.000). It is advised that in cases where data distribution is non-normal, the “Robust Maximum Likelihood” method should be used (Çelik & Yılmaz, 2016: 27; Şimşek, 2007: 55).

4. FINDINGS

In the model composed to determine the relationship between organizational learning and critical thinking, and intrapreneurship, the independent variables of the model are organizational learning and critical thinking, and the dependent variable is intrapreneurship.

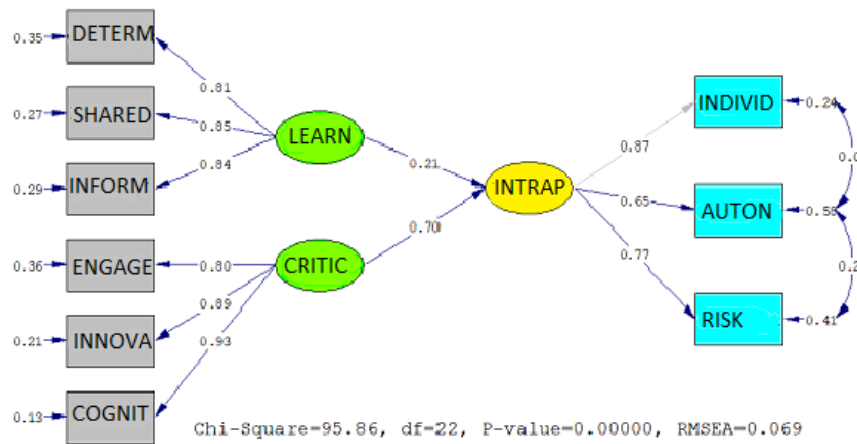


Figure 2. Structural Equation Modelling

In the model comprised, the presence, degree, and direction of the relation between the variables of organizational learning and critical thinking, and intrapreneurship.

Table 4. Structural Equation Results of the Model

Factors	Standard coefficient values	t-values	R ²
Organizational Learning			
Determination to learn	0.81	23.45	0.65
Shared vision	0.85	25.27	0.73
Intraorganizational information sharing	0.84	26.93	0.71
Critical Thinking			
Engagement	0.80	19.43	0.64
Innovativeness	0.89	21.69	0.79
Cognitive maturity	0.93	21.70	0.87
Intrapreneurship			
Individual networking	0.87	-	0.76
Autonomy	0.65	16.43	0.42
Risk-taking	0.77	20.76	0.59
Structural Relations			
Organizational Learning → Intrapreneurship	0.21	3.55	
Critical Thinking → Intrapreneurship	0.70	9.59	
Structural Equations			0.72
Intrapreneurship = 0.21*Organizational Learning + 0.70*Critical Thinking			

According to the results of the structural equation modeling, it was found that there is a statistically significant, positive, and direct relation between organizational learning and critical thinking, and intrapreneurship, and that the regression coefficient is 0.21 for organizational learning, and 0.70 for critical thinking. In addition, all t-values in the model were found to be significant at 0.01 (t-values > 2.576). When considered together, organizational learning and critical thinking explain 72 % of all intrapreneurships. High levels of path coefficients and correlation coefficients, significant levels of t-values, and low levels of error variances show that the designated model is

appropriate. Based on these data, it can be said that organizational learning and critical thinking have a significant effect on intrapreneurship.

In this structural model that is the subject of this research, according to the results obtained from the research of the effects of organizational learning and critical thinking on intrapreneurship, the increases in organizational learning and critical thinking levels also increase in parallel. Thus, each positive change in workers such as when improving their learning, their determination and resoluteness, when they share new information and skills with others in the organization, develop a common vision in the organization, increase in their critical thinking skills and their cognitive development, their openness to new information, and each improvement of their problem-solving, analytic thinking, thinking of alternatives in decision-making, reasoning, judgment, and finding new points of view positively affects the workers' intrapreneurship skills in proportion. At the same time, it can be said that this increase contributes to the development of employees in intrapreneurship, autonomy, risk taking and expanding individual networks.

Table 5. Fit Indices of the Model

Fit Criteria	Value	Fit Criteria	Value
χ^2	95.86	NNFI	0.98
df	22	PNFI	0.60
χ^2/df	4.3	CFI	0.99
RMSEA	0.069	RFI	0.98
RMR	0.021	IFI	0.99
SRMR	0.031	GFI	0.96
NFI	0.99	AGFI	0.91

According to the structural equation modeling results of this study, each fit index is within the designated reference values (Schermelleh-Engel et al., 2003: 52; Schreiber et al., 2006: 330; Şimşek, 2007: 14-48; Hooper et al., 2008: 58; Khine, 2013: 16; İlhan & Çetin, 2014: 31; İlhan & Çetin, 2014: 31; Aksu et al., 2017: 79). These results show that this model is appropriate, and when the values are considered, the structural model is statistically significant and appropriate.

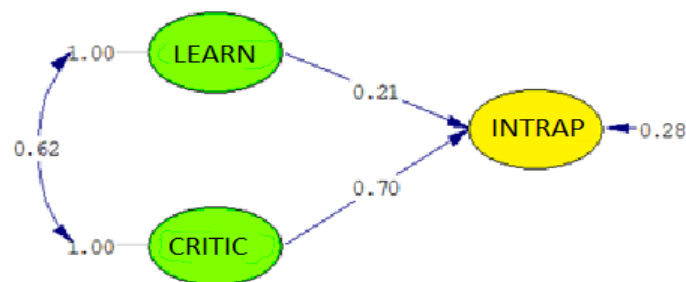


Figure 3. Structural Model

The aim of the structural equation modeling is to test whether the model that has been determined among variables beforehand can be verified by the data (Aksu et al., 2017: 63-70). The structural model obtained as a result of the test has confirmed the designated model. The result of the structural model shows that the subject of this study which is the effect of organizational learning and critical thinking on intrapreneurship can be determined. This result confirmed the hypothesis in the model determined before the research. So, the hypothesis “Organizational learning and critical thinking have a significant effect on intrapreneurship” has been confirmed. Accordingly, it is seen that there is a statistically significant, positive and direct relationship between organizational learning and critical thinking and intrapreneurship.

5. CONCLUSION, DISCUSSION, AND SUGGESTIONS

This study aims to determine the effect of organizational learning and critical thinking skills on the intrapreneurial skills of workers. Because of that, a questionnaire was applied to the workers in the textile and automotive sectors

operating in the Marmara Region. After the analyzes made with the help of the data obtained, the hypotheses determined within the scope of the research were tested and the results were stated. According to the result of the study, it was found that there is a statistically significant, positive, and direct relationship between organizational learning and critical thinking on intrapreneurship. So it can be said that organizational learning and critical thinking have a significant effect on intrapreneurship, and the increases in organizational learning and critical thinking levels also increase parallel in intrapreneurship. Therefore, the positive development in the learning abilities and skills of the employees in the organization, their determination and perseverance in learning, sharing the knowledge and skills they have acquired within the organization, developing a common vision within the organization, positive increase in critical thinking skills, cognitive development, being open to new information, problem-solving, Every development in analytical thinking, identifying alternatives in decision making, reasoning, making judgments, and obtaining different perspectives provides an increase in the intrapreneurship skills of the employees in parallel with this. At the same time, it can be said that this increase contributes to the development of employees in intrapreneurship activities, autonomy, risk taking and expanding individual networks.

As another result, there is a positive, significant, and direct relationship between organizational learning and intrapreneurship. This means that every increase in the learning levels of the employees in the organization will also lead to an increase in the levels of intrapreneurship. It is found that similar studies supported these results, and that organizational learning positively affected and increased intrapreneurship behavior (Honig, 2001; Liu et al., 2002; Basım et al., 2009; Oyarce, 2009; Kansikas & Murphy, 2010; Yılmaz & Görmüş, 2012; Martin-Rojas et al., 2013; Toksöz, 2015; Nielsen, 2015; Kılıçkaya, 2016; Sarıkaya et al., 2016; Solmaz, 2016; Safari et al., 2016; Safari et al., 2016; Seymen, 2017; Çiftçi et al., 2018; Ergün, 2019; Ergün & Korkmaz, 2020; Sağlam, 2020). Likewise, it is seen in the result, there is a positive, significant, and direct relationship between critical thinking and intrapreneurship. This means that every increase in the critical thinking levels of the employees in the organization will also lead to an increase in the levels of intrapreneurship. It is seen that previous studies also support this result (Agboeze et al., 2013; Kırbaşlar & Özsoy-Güneş, 2015; Akdemir & Yavuz, 2018; Akdemir, 2019; Gözübüyük, 2019). The previous studies show that organizational learning has a positive effect on intrapreneurship, and also, critical thinking has a positive effect on intrapreneurship. Therefore, these three variables were examined together in this study in terms of the fact that these concepts support and also affect each other positively.

According to Alshaar et al. (2023) knowledge-centered culture impacts employee intrapreneurial behavior significantly. Also Malik et al. (2021), it is concluded that corporate learning culture has a substantial impact on the growth of intrapreneurs. Schraiber et al., (2023) concluded that investing in knowledge management practices is essential to drive intrapreneurship and ensure the survival and competitiveness of organizations in challenging scenarios. Ashal et al. (2023) state that the learning organization has a strong effect on intrapreneurship. It could be concluded that organizations have to integrate and improve all of the dimensions of learning organization to develop an infrastructure that boosts the employment of intrapreneurship. Learning organization is considered a valuable method to promote intrapreneurship. Learning organization could build a bridge between organizational systems and people by boosting individual and corporate learning, encouraging the expression of implicit knowledge, and promoting entrepreneurial practices. Learning organization is considered an essential antecedent of intrapreneurship and it is an integrated and interconnected process.

Kikas (2022) states that the competencies of intrapreneurs are the foundation of the intrapreneurial behaviour of employees because they need specific competencies to participate in the intrapreneurial process and intrapreneurial projects. To facilitate intrapreneurship in organisations, employees should be provided with possibilities for intrapreneurial learning and developing intrapreneurial competencies, e.g. through intrapreneurship training. According to Sandberg (2021) the essential competencies employers will be looking for in the near future are critical thinking, analytical skills, creativity, and the ability to solve complex problems. Employees are expected to acquire new skills, while access to know-how is no longer a problem. Instead, mindfulness, empathy, the ability to cooperate, and a willingness to innovate are the traits most sought after.

In conclusion, the results obtained in this study show that organizational learning tendencies are of great importance to today's businesses. Therefore, workers and managers must give weight to the common goal of implementing learning practices and have a shared vision to maintain this goal. Additionally, workers must be trained and motivated to make decisions. Only in this way, employees can perceive the learning action not as an order but as their own will and become open to learning. In order to create organizational learning, managers and leaders need to support learning activities within the organization, lead in this regard and act decisively about learning. To have a clear attitude towards learning, to be sensitive, to provide a learning environment; it expresses

the determination of the organization and management in learning. In this way, learning can gain continuity. With intra-organizational knowledge sharing, elements such as knowledge, experience and ideas can be made meaningful and used in problem solving, business and production activities or decision-making processes. For this, businesses should consider the phenomenon of learning as a basic element for providing a competitive advantage, the continuity of the organization and the development of the organization, and they should see the expenditures made for the training of the employees as an investment, not an expense. In addition, there should be a continuous dialogue and flow of information between managers and employees, and in this way, a unity of purpose should be created in which all employees can see themselves as participants in determining the future of the organization. In addition, top management should emphasize the importance of knowledge sharing, create an environment for employees to share their experiences, and also analyze the unsuccessful activities of the organization and share the results with the organization in general.

In addition, the critical thinking skills of workers lead to a competitive advantage for organizations. Workers with a high tendency of engagement can not only utilize their reasoning skills in problem-solving and decision-making, but they are also inclined to communicate with others. Workers must be open to new ideas and be able to consider the differing opinions of others and change their minds when they obtain new information that is contradictory to their previous knowledge. Employees with a high tendency to participate use their reasoning skills and make an effort to communicate in problem-solving and making judgments. Employees with high cognitive maturity tend to be open to other ideas, make judgments or think objectively with different perspectives in problem-solving. Employees with a high tendency to be innovative make an effort to research, question and improve existing knowledge in order to acquire new knowledge. For this, employees should be open to new ideas, take into account the opinions of those who disagree with them, and be able to change their minds when they get new information that contradicts their own. Employees should be able to use the knowledge they have to solve a problem, go out of their way to find the right answer to the problem, and should not let their prejudices affect their decisions.

Likewise, it is crucial for the subsistence of businesses to uncover the intrapreneurial tendencies of their workers. For the workers to be able to realize their own ideas freely and exercise their command without fear of their superiors with the notion of autonomy in the context of intrapreneurship is also important for businesses. In this way, new product or service development or existing knowledge, process, product or service renewal is experienced. In terms of intrapreneurship, it is important for employees to transform their ideas and thoughts into action independently, to feel free, to use their authority without fear, and to make decisions without being under pressure, with the concept of autonomy. At the same time, it is necessary to take risks, which are in the spirit of entrepreneurship, and to take into account the damage that will occur at the end of the activity. It enables employees to use the information obtained with the help of their social environment, which is formed by expanding their individual networks within the organization, to reduce risk, to establish relationships based on trust, to share technical information, to access resources easily and quickly, to be aware of opportunities and to gain power by controlling the flow of information.

As suggestions, businesses must encourage and motivate their employees to learn, practice what they learn, criticize, question, and make innovations, and create a permanent organizational culture of learning by setting an example themselves, underline that organizational learning and critical thinking are part and parcel of the organization strategy. In addition, they must create environments that will increase intrapreneurial activities and support their workers in risk-taking and autonomy. Moreover, if there are any elements that may hinder organizational learning, critical thinking, and intrapreneurial activities within the organization or the administrative procedures, they must make a point of removing them. Considering all these conditions, the manager or leader in the organization, should support, encourage employees in learning, acquiring new knowledge, sharing the acquired knowledge within the organization and using the knowledge for the purposes of the organization. In addition, it is important for employees to be able to critically approach the issues in business processes, to look at events from different perspectives, to make objective decisions, and to produce alternatives and apply them in solving problems. Considering that the employees with intrapreneurship tendencies will contribute to the business, the top management should facilitate decision-making and taking responsibility, use initiative, take risks and act independently, and even reward the employees for positive entrepreneurial results. In this way, the motivation of other employees will increase and they will be encouraged in entrepreneurial issues. As a result, businesses encourage and motivate their employees to learn, apply and share what they have learned, criticize, question, and create innovation, create a permanent organizational culture in this regard, emphasizing that organizational learning and critical thinking are an indispensable part of organizational strategy. Employees should follow the developments in order to evaluate the activities in the business environment, take some risks such as exceeding the financial limits and standard procedures if necessary, and should not avoid spending time and resources for new product development activities. Employees should be in constant communication with the

people in their social networks, should not avoid contacting potential contact points that may be included in their social networks, and should use their social networks to get new ideas accepted by senior management. The top management should also empower the employees to help them come up with creative ideas, motivate them to be innovative and give them freedom in their work under necessary conditions. In addition, if there are factors that prevent organizational learning, critical thinking and intrapreneurship activities within the organization or in managerial practices, they should be removed.

The contribution of this research to the literature is to fill the gap in the literature by examining the concepts of organizational learning, critical thinking and intrapreneurship together for the first time. When the results obtained are examined, it is seen that these three concepts are positively affected by each other and tend to increase together in this research, and they are administrative issues that should be dealt with by organizations in terms of competitive advantage.

In future research on the subject of this study, the opinions of senior management, managers, supervisors, unit chiefs or leaders can be taken in addition to the evaluations of the employees in the research section. In this context, the attitude, attitude, encouragement, motivation, support, exemplary and rewarding of the organization and the management towards learning, the critical skills of the employees and the internal entrepreneurial activities of the employees, by creating an organizational culture, taking such activities around a purpose and creating a vision or otherwise. Elements such as prohibition, obstruction, punishment can also be examined. In this way, different results can be obtained. However, organizational learning, critical thinking and intrapreneurship activities and skills may also vary according to the sector. Within the scope of this study, employees in the textile and automotive sectors were taken as a basis and the research was limited to the Marmara Region. In future research, considering the employees in different sectors and research to be conducted in different regions may produce different results.

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AUTHORS' DECLARATION

This paper complies with Research and Publication Ethics, has no conflict of interest to declare, and has received no financial support. For the scale used in the article, it is declared by the authors that permission was obtained from the original owner of the scale. The authors sent a signed "*Copyright Transfer Form*" to the journal. Regarding the conduct of this research, an "*Ethics Permission Certificate*" dated 06/07/2018 and numbered 29563864-050.04.04-E.245673 was obtained from the Ethics Committee of the University of Trakya.

AUTHORS' CONTRIBUTIONS:

Conceptualization, writing-original draft, editing – **HG** and **ASÜ**, data collection, methodology, formal analysis – **HG**, Final Approval and Accountability – **HG**.

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