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Comparative Analysis of MCDM Methods for the Assessment of Corporate Sustainability Performance in Energy Sector

Nazlı ERSOY[1], Soner TASLAK[2]

ABSTRACT

Energy is a significant input for production, growth, and development. A sustainable energy sector, where energy production and consumption balance are ensured, constitutes a key point for nature and humanity. In this study, a multidimensional framework is presented to measure corporate sustainability in the energy sector. Based on this framework, the sustainability performance of energy companies operating in the Asia and Europe regions is measured by hybrid multiple-criteria decision-making (MCDM) methods, considering the economic, social and environmental dimensions of sustainability. The Entropy method is preferred to specify the criteria weights, the Proximity Indexed Value (PIV) - Range of Value (ROV) - Grey relational analysis (GRA) - Measurement Alternatives and Ranking according to Compromise Solution (MARCOS) methods are used to rank the alternatives. Sensitivity analysis was applied to test the robustness of the model and it was determined that the criterion weights obtained by different methods had different effects on the rankings. The Copeland method is used to obtain a single rational ranking from different rankings. According to Copeland's results, EN13, EN3, EN10 companies took the first place in economic, environmental and social dimensions, respectively. It is concluded that energy companies in the Asian region are more sustainable than in the European region. Moreover, Thailand is the most sustainable country in the Asian region. The proposed framework can be contributed to the development of the energy sector.

Keywords: Corporate Sustainability Performance, Energy Sector, PIV, ROV, GRA, MARCOS.

JEL Classification Codes: D81, C44, C63

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INTRODUCTION

Energy is an important variable that determines the degree of economic development of countries. All societies ask for energy services to satisfy the basic needs of humans such as lighting, space comfort, cooking, mobility, and communication (Edenhofer et al., 2011: 7). Energy production, conversion, and consumption are important inputs for the environment and sustainable development. However, the ever-increasing world energy production and consumption disrupt the ecosystem and cause important environmental problems. As a result of burning fossil fuels, air pollution has increased, the rate of greenhouse gas in the atmosphere has gradually increased, causing many problems, especially global warming. The emerging problems have led countries and companies to clean and sustain energy resources and to take various measures against environmental pollution. This situation has increased the importance of sustainability in the energy sector.

Sustainable energy refers to energy production models that can meet the current and future needs of the society at the lowest economic, environmental and social costs. The life cycle refers to the cost of a product from obtaining its original raw materials to production, shipping, and final destruction and disposal (Randolph and Masters, 2008: 3). It is clear that using renewable energy sources that include hydroelectric, bioenergy, geothermal energy, wind, direct solar energy and ocean energy (tides and waves) instead of fossil fuel-based energy sources will slowly help the world reach the idea of sustainability (Owusu and Asumadu-Sarkodie, 2016: 3). Corporate sustainability in the energy sector is to ensure the balance of energy production and consumption in a way that protects nature and the environment. To ensure corporate sustainability in the energy sector, all the countries of the world need to develop their energy policies in a way to ensure

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sustainable development, use energy efficiently, and diversify in renewable energy sources (Johansson et al., 1992: 210-211). The duty of companies in ensuring sustainability is to transfer resources to future generations and to continue their activities without harming the environment.

Although most studies have examined sustainability performance measurement with multiple-criteria decision-making (MCDM) methods, the number of studies evaluating corporate sustainability in the energy sector is limited. Performance evaluation in the energy sector, which is strategically and vitally important for countries, will contribute to the development of the sector and contribute to economic, social and environmental developments. Therefore, in this study, a framework based on hybrid MCDM methods was proposed to evaluate corporate sustainability performance in the energy sector. Accordingly, the sustainability performance of energy companies operating in Asia and Europe was evaluated using Entropy-based Proximity indexed value (PIV)-Range of value (ROV)-Grey relational analysis (GRA)-Measurement alternatives and ranking according to compromise solution (MARCOS)-Copeland methods. Also, a comparative analysis was conducted.

The motivation and superiority of the proposed model in this paper are outlined as follows:

- It provides an overview of evaluating corporate sustainability based on three dimensions.
- It is benefited from the advantageous aspects of the different methods and a multiple comparisons are made between the results of the different MCDM techniques.
- The suitability of the ROV, PIV and MARCOS models is tested for the first time for corporate sustainability performance measurement.
- The proposed integrated model is used for the first time for performance measurement in the energy sector.
- The regions, countries and companies are compared in different years.

The rest of the paper is summarized as follows. Section 2 discusses the relevant previous literature studies. In section 3, the research methodology of the study is included. The application results are given in section 4. In the last section, the obtained results are given.

REVIEW OF PREVIOUS LITERATURE

MCDM methods provide a suitable framework for decision-makers to reach a solution in the case of multiple criteria and alternatives. In recent years, MCDM methods have been handled under many different topics such as performance evaluation (Abdel-Basset et al. 2020), location selection (Tadić et al. 2020), supplier selection (Stević et al. 2020), agriculture (Mishra and Satapathy, 2019), transport (Yannis et al. 2020) and energy (Alizadeh et al. 2020).

As in other topics, MCDM methods are frequently applied in sustainability assessment. The results obtained from the bibliometric analysis presented by Chowdhury and Paul (2020) also support this opinion. Accordingly, in 50 of the 52 articles reviewed by the authors, at least 1 MCDM technique was used to solve corporate sustainability problems. Wicher et al. (2019) conducted a Fuzzy Analytic Network Process (FANP) to evaluate the sustainability performance of the industrial corporations. In the study, where two different weights (local and global) were assigned to the criteria, it is concluded that the proposed methodology is a suitable tool for measuring the sustainability of industrial companies. Cui et al. (2019) used grey theory and the decision-making trial and evaluation laboratory (DEMATEL) to measure the sustainability of high technology companies in China. It was concluded that companies should give more importance to their social and environmental strategies in order to improve their sustainability performance. Yi et al. (2019) assessed the sustainability of cities using MCDM methods. In the study, which includes 18 criteria under three dimensions, Beijing was determined as the most sustainable city. Mao et al. (2019) evaluated and selected the supplier using a heterogeneous MCDM framework. They used TOPSIS to aggregate the heterogeneous evaluation information and Interval Valued Intuitionistic Fuzzy (IVIF)-Iterative Multi-Criteria Decision Making (TODIM) method to rank the alternative sustainable suppliers. Li et al. (2020) applied MCDM methods to measure the sustainability performance of hydrogen production technologies. The combined GRA and DEMATEL methods were preferred to specify the criteria weights.

Most of the studies using MCDM techniques in the energy sector have focused on subjects such as energy technology selection (Ali et al. 2019), evaluation of energy projects (San Cristóbal, 2011), power plant location selection (Wang et al. 2018), evaluation of energy technologies (Siksnelyte-Butkiene et al. 2020). On the other hand, the number of studies evaluating corporate sustainability performance in the energy sector with integrated MCDM methods is quite limited. Ghasemi and Nadiri (2016) evaluated the sustainability performance of 21 companies operating in the Iranian petrochemical industry using the

Table 1: Alternatives

Firms	Country/Region	Firms	Country/Region
EN1=Akenerji Elektrik Uretim	Turkey/Asia	**EN16=**A2A Spa	Italy/Europe
EN2=Aksa Enerji	Turkey/Asia	**EN17=**Energias de Portugal	Portugal/Europe
EN3=Aygaz	Turkey/Asia	**EN18=**Enagas S.A.	Spain /Europe
EN4=Bangchak Petroleum	Thailand/Asia	**EN19=**Endesa	Spain /Europe
EN5= Electricity Generating Public Company EGCO	Jordan/Asia	**EN20=**Energeticky a Prumyslovy Holding	Czech Republic/ Europe
EN6=Glow	Thailand/Asia	**EN21=**Gruppo ERG	Italy/Europe
EN7=IRPC	Thailand/Asia	**EN22=**Gruppo Hera	Italy/Europe
EN8=KazMunay Gas	Kazakhistan/Asia	**EN23=**Iberdrola	Spain /Europe
EN9=OPET Petrolculuk	Turkey/Asia	**EN24=**INA Group	Croatia/Europe
EN10=PTT Public Company Limited	Thailand/Asia	**EN25=**Iren	Italy/Europe
"EN11=Ratchaburi Electricity Generating Holding Public Company Limited"	Thailand/Asia	**EN26=**Naturgy Energy Group, S.A	Spain /Europe
EN12=Star Petroleum Refining	Thailand/Asia	**EN27=**PKN Orlen	Poland/Europe
EN13=Thai Oil	Thailand/Asia	**EN28=**Repsol	Spain /Europe
EN14=Towngas	Hong Kong /Asia	**EN29=**SNAM	Italy/Europe
EN15=Zorlu Energy Group	Turkey/Asia	**EN30=**Terna Group	Italy/Europe

Source: (http://database.globalreporting.org)

H3SE excellence model and the DEMATEL, TOPSIS, and Preference Ranking Organization Method for Enrichment Evaluations (PROMETHEE) methods. At the end of the study, it was determined that the rankings obtained by the different techniques were similar. González et al. (2016) measured the sustainability performance of four power plants operating in Cuba using the integrated Analytic Network Process (ANP)-Analytic Hierarchy Process (AHP)-Balanced Scorecard techniques. In the study where three dimensions of sustainability were discussed, 18 indicators were determined based on ISO 14031 and Global Reporting Initiative (GRI) guidelines. It was concluded that the proposed model is suitable for corporate sustainability performance measurement. Vivas et al. (2019) used Principal Component Analysis (PCA), Multiple Linear Regression (MLR), and PROMETHEE methods to evaluate the sustainability performance of Brazilian oil and gas companies. Three dimensions namely economic, social and, environmental and 20 criteria were included in the study. It was concluded that the company achieved its best sustainability performance in 2011 and 2010.

METHODOLOGY

In this section, the alternatives and criteria used in the study are explained. Then, the mathematical notations of the MCDM methods used in this study are given.

Alternatives

Alternatives were identified to provide a comprehensive corporate sustainability assessment framework in the energy sector. In the process of determining the alternatives, the GRI database was used. Accordingly, 30 large-scale energy companies reporting based on the GRI guidelines and operating in the energy & energy utilities sectors were included in the scope of the study. There are six regions in the GRI database: Asia, Europe, Africa, North America, Oceania, and Latin America &

the Caribbean. However, only the European and Asian regions were included in the scope of this study because of the following reasons: i. The number of companies operating in the different regions was different from each other, ii. There was no report within the specified period, and data were missing. The period range is from 2016-2018. The alternatives are as shown in Table 1.

Evaluation Criteria

Criteria are the elements that allow a healthy assessment and they are effective in the process of the selection of alternatives. In this study, the evaluation process was carried out under three dimensions of sustainability. A total of 23 corporate sustainability criteria, 8 economic (Table 2), 8 environmental (Table 3), and 7 social (Table 4), representing the energy sector, were determined. The economic, environmental and social indicators of the companies were obtained from the reports titled sustainability report, integrated report, corporate social responsibility report, annual report, integrated annual report and corporate responsibility report in the GRI database (http://database.globalreporting.org). To obtain financial data, besides the sustainability reports of the companies, annual and financial reports were used. The distribution and explanations of the 23 sustainability criteria according to the dimensions are given in Tables 2-4, respectively.

Methods

Sustainable performance measurement is inherently a multidimensional problem and MCDM methods offer a suitable framework for corporate sustainability performance evaluation. In this study, hybrid MCDM methods were used to measure the sustainability performance of energy companies. The Entropy method was used to designate the criteria weights and the PIV-ROV-GRA-MARCOS methods were used to rank the alternatives according to their performance. In the last phase, the Copeland method was preferred to achieve a single rational ranking using the rankings obtained

Table 2: Economic Criteria

Criteria	Opt.	Unit/Formulation	Criteria	Opt.	Formulation
EC1: Personnel expenses	min	Million euro	**EC5:** Return on assets	max	Net Profit/Total assets
EC2: Earnings per share	max	Period Income/Number of shares	**EC6:** Return on equity	max	Net Profit /Shareholders Equity
EC3: Current ratio	max	Current assets / Short term liabilities	**EC7: "**Asset turnover ratio"	max	"Net Sales/ Total assets"
EC4: "Quick ratio"	max	(Current assets - Inventories) / Short term liabilities	**EC8:** Leverage ratio	min	Liability/ Total assets

Source: (http://database.globalreporting.org)

Table 3: Environmental Criteria

Criteria	Opt.	Unit	Criteria	Opt.	Unit
ENV1: Total energy consumption	min	Million GJ	**ENV5:** Water discharge	min	Million m^3
ENV2: Water withdrawal	min	Million m^3	**ENV6:** Total waste	min	Million ton
ENV3: Total GHG emissions, scope1+2	min	Million $Tco_2eq.$	**ENV7:** Hazardous waste	min	%
ENV4: Direct GHG emissions, Scope 1	min	%	**ENV8:** Recycled waste	max	%

Source: (http://database.globalreporting.org)

Table 4: Social Criteria

Criteria	Opt.	Unit	Criteria	Opt.	Unit
SO1: Turnover rate	min	%	**SO5:** Average hours of training per employee	max	Hour
SO2: New employees	max	Number	**SO6:** Total number of employees	max	Number
SO3: Occupational fatality	min	Number	**SO7:** Female employees rate	max	%
SO4: Occupational disease	min	Number			

Source: (http://database.globalreporting.org)

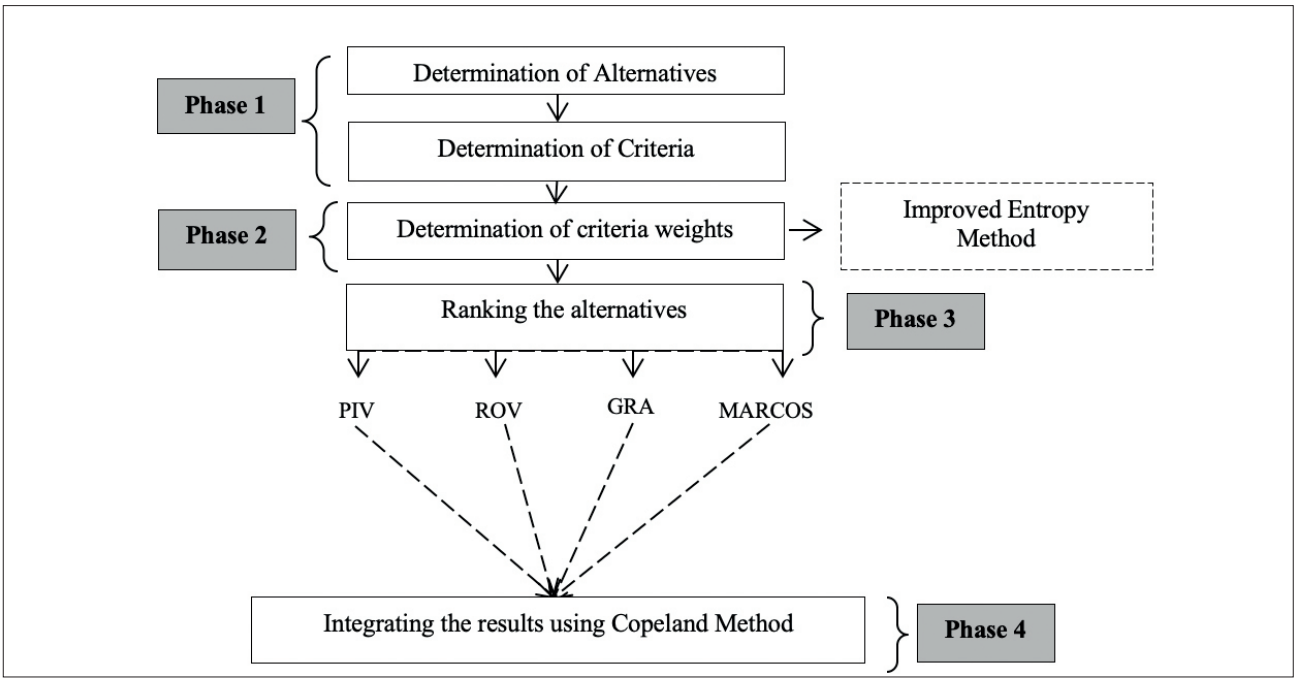

Figure 1: The Procedure of the Research Study

by different methods. In this direction, the design of the study is shown in Figure 1.

Improved Entropy Method: Entropy was first defined by Clausius (1865) as a measure of uncertainty and disorder in a system. In the Entropy method, the natural logarithm function is used to calculate the significance of the criteria. Serious problems may arise during the logarithmic calculation phase in case of negative or zero values in the decision matrix. To prevent problems that may arise, corrections can be made for negative data using the Improved Entropy method developed by Zhang et al. (2014). The steps of the Improved Entropy method are as follows (Wang and Lee, 2009: 8982; Zhang et al., 2014: 3).

Step 1: The decision matrix is created.

Step 2: Decision matrix elements are transformed by standardizing the Z-score using equation (1).

$$x_{ij} = \frac{X_{ij} - \bar{X}_i}{S_i} \quad (1)$$

x_{ij} shows the standardized data of the index ith located in the region jth.

X_{ij} shows the original data,

x_i and S_i show the arithmetic mean and standard deviation values, respectively.

Step 3: Decision matrix elements are made positive using equation (2).

$$x'_{ij} = x_{ij} + A \quad A > \left|\min x_{ij}\right| \tag{2}$$

A indicates the smallest value in the decision matrix; x'_{ij}, indicates the standard value after conversion. x'_{ij} must be>0.

Step 4: Decision matrix elements are normalized using equation (3);

$$P_{ij} = \frac{x_{ij}}{\sum_{i=1}^{m} x_{ij}} \tag{3}$$

P_{ij} shows the value of normalized decision matrix elements.

Step 5: Entropy measure of each criterion is found using equation (4).

$$e_j = -k\sum_{i=1}^{n} P_{ij} InP_{ij} \quad \forall_j \tag{4}$$

$$k = \frac{1}{\ln(m)}$$

K represents a constant and indicated by the formula.

e_j is the Entropy value of the jth criterion.

m indicates the number of alternative.

Step 6: The degree of differentiation of the criteria is calculated using equation (5).

$$d_j = 1 - e_j, \quad \forall_j \tag{5}$$

d_j shows a contrast density in the j structure.

Step 7: Criterion weights are calculated using equation (6).

$$W_j = \frac{d_j}{\sum_{k=1}^{n} d_k} \forall_i \tag{6}$$

W_j shows the criteria weight; $\sum_{wj}=1$, $0 \leq w_j \leq 1$

PIV Method: This method was introduced by Mufazzal and Muzakkir (2018) to prevent the rank reversal phenomenon and has a simple calculation procedure. The steps of this method are as follows (Ulutaş and Karaköy, 2019: 56-57):

Step 1: Decision matrix is constituted

In the first step, the decision matrix is constituted.

Step 2: Decision matrix elements are normalized

Decision matrix elements are normalized using the vector normalization formula in equation (7).

$$a_{ij} = \frac{b_{ij}}{\sqrt{\sum_i^m b_{ij}^2}} \tag{7}$$

b_{ij} shows the original data; a_{ij} shows the real decision value based on the ith alternative.

Step 3: The weighted normalized decision matrix is determined

A weighted normalized decision matrix is constituted using equation (8).

$$v_{ij} = w_{jc} * a_{ij} \tag{8}$$

w_{jc} indicates the criteria weights, a_{ij} indicates the normalized decision matrix elements, v_{ij} indicates the weighted decision matrix.

Step 4: Weighted proximity index is evaluated

The deviation of each alternative from the best value is measured by considering the benefit and cost-oriented criteria, using the equation (9) and equation (10).

$$e_{ij} = v_{max} - v_{ij} \tag{9}$$

$$e_{ij} = v_{ij} - v_{min} \tag{10}$$

v_{max} and v_{min} represent the largest and smallest value in weighted decision matrix, respectively.

Step 5: The total proximity value is determined

The total proximity value is calculated for each alternative using equation (11).

$$z_i = \sum_{j=1}^{n} e_{ij} \tag{11}$$

$(j=1,2,3,\ldots,n)$ indicates decision criteria and $(i=1,2,3,\ldots,m)$ indicates available alternatives. (z_i) and (e_{ij}) show the overall proximity value of each alternative and the weighted proximity values of criteria, respectively.

Step 6: The alternatives are ranked.

The alternative with the lowest dj value representing the minimum deviation from the best solution takes first place. Other alternatives with increasing d_j value are also ranked by considering similar dimensions.

ROV Method: This method was proposed by Yakowitz et al. (1993). The steps of the ROV method are as follows (Madić and Radovanović, 2015: 198-199):

Step 1: Decision matrix is created

A decision matrix is created that includes alternatives in rows and criteria in columns.

Step 2: Decision matrix elements are normalized.

Utility-side criteria and cost-side criteria are normalized using equation (12) and equation (13), respectively.

$$\bar{x}_{ij} = \frac{x_{ij} - x_{ij}^{\min}}{x_{ij}^{\max} - x_{ij}^{\min}} \quad (12)$$

$$\bar{x}_{ij} = \frac{x_{ij}^{\max} - x_{ij}}{x_{ij}^{\max} - x_{ij}^{\min}} \quad (13)$$

x_{ij}^{min} *and* x_{ij}^{max} represent the smallest and largest value in decision matrix, respectively.
x_{ij} shows the original data

Step 3: Utility functions (the best and worst) are calculated

In the last step, separate utility functions are created for the criteria. Utility functions (u_i^+, u_i^-) for benefit and cost criteria are shown in equations (14) and (15), respectively.

$$Max: u_i^+ = \sum_{j=1}^{n} \bar{x}_{ij}.w_j \quad (14)$$

$$Min: u_i^- = \sum_{j=1}^{n} \bar{x}_{ij}.w_j \quad (15)$$

u_i^+ and u_i^- shows the utility function for benefit and cost criteria. Wj shows the criterion weights. Weights must necessarily meet the following two conditions:

$$\sum_{j=1}^{n} w_j = 1 \quad (16)$$

$$w_j \geq 0$$

If $u_i^- > u_i^+$ the alternative i can be said to be better than the *i* alternative, regardless of the total score.

$$u_i = \frac{u_i^- + u_i^+}{2} \quad (17)$$

u_i represent the final utility function. The alternative with the highest value of u_i is determined as the best alternative.

GRA Method: GRA is an effective tool for decision making that takes its place in the literature under the title of Grey System Theory (Wang and Tong, 2004: 3). The steps of the method are as follows (Wu, 2002: 211-212):

Step 1: Decision matrix is normalized

Decision matrix is normalized in 3 different ways: "higher is better", "lower is better" and "nominal solution is better". Benefit and cost criteria and the criteria required to be in nominal value are normalized with the help of equations (18-20), respectively.

$$x_i^*(\mathrm{k}) = \frac{x_i(\mathrm{k}) - \min\limits_k x_i(\mathrm{k})}{\max\limits_k x_i(\mathrm{k}) - \min\limits_k x_i(\mathrm{k})} \quad (18)$$

$$x_i^*(\mathrm{k}) = \frac{\max\limits_k x_i(\mathrm{k}) - x_i(\mathrm{k})}{\max\limits_k x_i(\mathrm{k}) - \min\limits_k x_i(\mathrm{k})} \quad (19)$$

$$x_i^*(\mathrm{k}) = \frac{\left|x_i(\mathrm{k}) - x_{ob}(\mathrm{k})\right|}{\max\limits_k x_i(\mathrm{k}) - x_{ob}(\mathrm{k})} \quad (20)$$

Step 2: Reference series is created

The reference series is created by taking the largest value in the relevant column in the decision matrix.

$$x_0 = (\mathrm{x}_0(1), \mathrm{x}_0(2), ..., \mathrm{x}_0(\mathrm{j}), ..., \mathrm{x}_0(\mathrm{n}))$$

$$i = 1, 2, 3, ..., m.$$

x_0 indicates the largest value of the criterion j. within the normalized values. The reference series is added as the first row to the decision matrix created in the previous step and converted into a comparison matrix.

Step 3: The absolute value table is created using equation (21).

$$\Delta_{0i}(\mathrm{k}) = \left|x_0^*(\mathrm{k}) - x_i^*(\mathrm{k})\right| \quad (21)$$

$\mathrm{x}_0^*(\mathrm{k})$ shows the reference value for each column.

$\mathrm{x}_\mathrm{i}^*(\mathrm{k})$ shows the normalized value in the decision matrix.

Step 4: Grey relationship coefficients are calculated with the help of equation (22).

$$\gamma_{0i}(k) = \frac{\Delta_{\min} + \varsigma\Delta_{\max}}{\Delta_{0i}(k) + \varsigma\Delta_{\max}} \quad (22)$$

$$\Delta_{\max} = \max_i \max_k \Delta_{0i}(k) \quad \Delta_{\min} = \min_i \min_k \Delta_{0i}(k)$$

ζ is expressed as a discriminating coefficient and it generally takes the value 0.5 in practice (Zhai et al., 2009: 7074).

Step 5: Grey Relationship degree is calculated using equation (23).

$$\Gamma_{0i} = \sum_{k=1}^{n} \left[w_i(k) \, x \, r_{0i}(k) \right] \quad (23)$$

The priority of the alternatives is ranked according to the value of Γ_{0i}.

MARCOS Method: This method was introduced by Stević et al. (2020) to define the relationship between reference values and alternatives. The steps of the MARCOS method are as follows (Stević et al., 2020: 4-5):

Step 1: As a first step, a decision matrix is formed.

Step 2: The extended initial matrixis created by defining ideal (AI) and non-ideal (AAI) solutions.

The worst alternative (AAI) and the alternative with the best features (AI) are defined using the equations (24) and (25), respectively.

$$\text{AAI} = \min_i x_{ij} \ if \ j \in \text{B and } \max_i x_{ij} \ if \ j \in C \quad (24)$$

$$\text{AI} = \max_i x_{ij} \ if \ j \in \text{B and } \min_i x_{ij} \ if \ j \in C \quad (25)$$

$\min_i x_{ij}$ and $\max_i x_{ij}$ represents the smallest and largest value in related column.
B represents the utility criteria group; C represents the cost-side criteria group.

Step 3: Extended initial matrix is normalized.

$$n_{ij} = \frac{x_{ai}}{x_{ij}} \quad \text{for cost criteria} \quad (26)$$

$$n_{ij} = \frac{x_{ij}}{x_{ai}} \quad \text{for benefit criteria} \quad (27)$$

The x_{ij} and x_{ai} are the elements of the X initial matrix.

Step 4: The weighted normalized decision matrix $V = [v_{ij}]mxn$ is constructed.

The weighted matrix V is obtained using equation 28.

$$v_{ij} = n_{ij} * w_j \quad (28)$$

w_j indicates the criteria weights, n_{ij} indicates the normalized decision matrix elements, v_{ij} indicates the weighted decision matrix.

Step 5: The utility degree (K_i) of the alternatives is calculated.

The utility degrees of each alternative are calculated using equations (29) and (30), respectively.

$$K_i^- = \frac{S_i}{S_{aai}} \quad (29)$$

$$K_i^+ = \frac{S_i}{S_{ai}} \quad (30)$$

S_i $(i = 1,2, .., m)$ consists of the sum of the elements in the weighted matrix (V) and it is expressed as in equation (31).

$$S_i = \sum_{i=1}^{n} v_{ij} \quad (31)$$

Step 6: Determining the utility functions $f(K_i)$ of the alternatives

The utility function is identified using equation (32).

$$f(K_i) = \frac{K_i^+ + K_i^-}{1 + \frac{1 - f(K_i^+)}{f(K_i^+)} + \frac{1 - f(K_i^-)}{f(K_i^-)}} \quad (32)$$

$f(K_i^-)$ and $f(K_i^+)$ show the utility function associated with the non-ideal solution and the ideal solution, respectively. Solutions are expressed by equations (33) and (34), respectively.

$$f(K_i^-) = \frac{K_i^+}{K_i^+ + K_i^-} \quad (33)$$

$$f(K_i^+) = \frac{K_i^-}{K_i^+ + K_i^-} \quad (34)$$

Step 7: The alternatives are ranked

The alternatives are sorted according to the final values of the utility functions. The alternative with the highest utility function value is preferred.

Copeland Method: The Copeland method which ranks the alternatives according to their superiority (victorious and defeated) (Naderi et al., 2013: 63) provides reconciliation of the results obtained by different methods. The steps of the method are as follows (Eş, 2013: 57-58):

Step 1: The rank values of the alternatives are determined.

The matrix in Table 5 is prepared by determining the rank value of each alternative obtained by each method.

Table 5: Rank Values of Alternatives

Method / Alternative	Y_1	Y_2	Y_3	Y_M
A_1	X_{11}	X_{12}	X_{13}	X_{1M}
A_2	X_{21}	X_{22}	X_{23}	X_{2M}
A_3	X_{31}	X_{32}	X_{33}	X_{3M}
A_N	X_{41}	X_{42}	X_{43}	X_{NM}

M: The total number of MCDM methods,

N: The total number of alternatives,

X_{NM}: The ranking value of the alternative N obtained in the method M.

Step 2: Rank values are standardized.

The rank values of the alternatives are rearranged according to the values in Table 6 and the matrix is reconstructed. The standard values of the alternatives are obtained by multiplying the alternative rank values by 2 and subtracting 1.

Table 6: Standard Rank Values of Alternatives

Alternative Rank Value	1	2	3	4	5	6	7	8	9	10
Standard Value	1	3	5	7	9	11	13	15	17	19

Step 3: Average rank values are obtained.

The mean rank values are obtained by dividing the sum of the standard values obtained from the alternatives by the number of alternatives. The alternative with the lowest average rank value is the alternative with the highest performance.

RESULTS

In this study, hybrid MCDM methods were used to evaluate the corporate sustainability performance of energy companies operating in Asia and Europe during the period of 2016 to 2018. The data was collected in March 2020 and was retrieved from the global reporting initiative database. In the first stage of the analysis, the Entropy method was used to specify the criteria weights. Then, PIV-ROV-GRA-MARCOS methods were used to sort the alternatives according to performance scores. In the last stage, the Copeland method was used to obtain a single rational ranking using the rankings obtained by different methods.

Determination of Alternatives and Criteria

The alternatives and criteria are the basic elements of the decision matrix in MCDM methods. In this study, the GRI database was preferred to determine the alternatives. To determine the criteria, a comprehensive literature review was carried out.

Determination of Criteria Weights via the Improved Entropy Method

The improved entropy method is a suitable model for continuing the transaction steps when there are negative and zero-valued data in the decision matrix. The improved entropy method was preferred in this study because it allows an objective evaluation by using only decision matrix elements. In order to preserve the integrity of the text, only 2018 economic dimension performance results are given in detail in this section. The decision matrices for all three dimensions and all three years (2016-2018) are presented in Appendix A-C.

The first step in determining criterion weights with the Entropy method is to constitute a decision matrix that includes evaluation criteria and alternatives. The decision matrix is given in Table 7.

Table 7: Economic Dimension Decision Matrix for 2018

	EC1	EC2	EC3	EC4	EC5	EC6	EC7	EC8
EN1	7	-0.36	0.22	0.22	-0.27	3.38	0.39	0.92
EN2	4	0.007	0.86	0.74	0.02	0.08	0.73	0.72
EN3	17	0.13	1.09	0.86	0.05	0.09	1.91	0.50
EN4	99	0.05	1.47	0.80	0.05	0.06	1.64	0.58
EN5	63	1.20	1.51	1.51	0.10	0.22	0.17	0.51
EN6	34	0.17	1.90	1.40	0.08	0.17	0.51	0.56
EN7	278	0.01	0.95	0.37	0.04	0.09	1.42	0.52
EN8	1162	0.002	1.81	1.64	0.05	0.10	0.50	0.50
EN9	17	0.76	1.52	1.18	0.09	0.25	5.46	0.66
EN10	1539	0.12	2.11	1.80	0.07	0.14	0.99	0.44
EN11	22	0.12	2.22	2.22	0.06	0.09	0.45	0.41
EN12	34	0.02	1.6	0.81	0.04	0.06	3.80	0.30
EN13	31	0.15	4.3	3.5	0.04	0.08	1.45	0.53
EN14	362	0.07	0.79	0.69	0.08	0.15	0.29	0.47
EN15	29	0.003	0.55	0.55	0.002	0.01	0.39	0.86
EN16	492	0.11	1.09	1.02	0.03	0.10	0.63	0.66
EN17	652	0.14	0.79	0.75	0.02	0.06	0.09	0.69
EN18	131	1.86	2.80	2.75	0.05	0.15	0.14	0.68
EN19	947	1.34	0.73	0.54	0.04	0.15	0.62	0.71
EN20	506	0.05	1.06	0.97	0.05	0.20	0.53	0.76
EN21	64	0.70	2.31	2.26	0.03	0.07	0.22	0.61
EN22	551	0.19	1.03	0.98	0.03	0.10	0.67	0.69
EN23	2679	0.48	0.83	0.69	0.03	0.07	0.31	0.61
EN24	270	2.98	0.99	0.54	0.06	0.10	1.08	0.43
EN25	394	0.19	1.00	0.96	0.03	0.11	0.47	0.70
EN26	1010	-2.86	1.19	1.07	-0.07	-0.19	0.60	0.64
EN27	604	2.99	1.79	0.94	0.09	0.16	1.71	0.44
EN28	1874	1.45	1.35	1.01	0.04	0.08	0.82	0.49
EN29	201	0.29	0.61	0.59	0.04	0.16	0.11	0.73
EN30	64	0.35	0.74	0.74	0.04	0.18	0.14	0.76

According to Table 7, the criteria of some companies (E2 (Earnings per share), E5 (Return on assets), E6 (Return on equity)) are negative because the net profits of the mentioned companies in the relevant periods are negative. Since the criteria E2, E5 and E6 are calculated by taking into account the net profit of the period, the values of the companies with negative net profit for these criteria are also negative.

In the second step, the Z score standardization transformation of the decision matrix data was carried out using equation (1). In the third step, equation (2) was used to transform negative and 0 values in the decision matrix to positive (Table 8).

In the fourth step, the decision matrix elements in Table 8 are normalized using equation (3). In the last step, the Entropy measure of the criteria is calculated using equation (4) and the degree of differentiation of information is calculated using equation (5). Criteria weights were determined using equation (6). All results are presented in Table 9.

Ranking Energy Companies via the PIV Method

In this section, the positive decision matrix in Table 8 will be used to apply the PIV method. In the first step, the elements in Table 8 are normalized using equation (7). In the second step, the weighted normalized matrix was obtained by multiplying the normalized criteria values and the criteria weights in Table 9. Then, considering the benefit-oriented (EC2-EC7) and cost-oriented criteria (EC1, EC8), the deviation of each alternative from the best value was measured using equations (9-10) and the sum of elements in each row was calculated using equation (11).

Table 8: Positive Decision Matrix

	EC1	EC2	EC3	EC4	EC5	EC6	EC7	EC8
EN1	3,99981	3,973	3,3031	3,4796	0,079	9,979	4,246	6,967
EN2	3,99511	4,327	4,0938	4,188	4,518	4,503	4,543	5,556
EN3	4,01551	4,445	4,3779	4,3514	4,977	4,52	5,576	4,004
EN4	4,14419	4,368	4,8473	4,2697	4,977	4,47	5,34	4,568
EN5	4,08769	5,476	4,8968	5,2369	5,743	4,736	4,053	4,075
EN6	4,04218	4,484	5,3786	5,0871	5,437	4,653	4,351	4,427
EN7	4,4251	4,33	4,2049	3,6839	4,824	4,52	5,147	4,145
EN8	5,81236	4,322	5,2674	5,414	4,977	4,536	4,342	4,004
EN9	4,01551	5,052	4,9091	4,7874	5,59	4,785	8,685	5,133
EN10	6,40399	4,436	5,638	5,632	5,283	4,603	4,771	3,581
EN11	4,02335	4,436	5,7739	6,2041	5,13	4,52	4,298	3,369
EN12	4,04218	4,339	5,0079	4,2833	4,824	4,47	7,231	2,593
EN13	4,03748	4,465	8,3435	7,9478	4,824	4,503	5,174	4,216
EN14	4,55692	4,388	4,0073	4,1199	5,437	4,619	4,158	3,792
EN15	4,03434	4,323	3,7108	3,9291	4,243	4,387	4,246	6,544
EN16	4,76093	4,426	4,3779	4,5694	4,671	4,536	4,456	5,133
EN17	5,01201	4,455	4,0073	4,2016	4,518	4,47	3,983	5,345
EN18	4,19441	6,112	6,4904	6,9261	4,977	4,619	4,027	5,274
EN19	5,47496	5,611	3,9332	3,9155	4,824	4,619	4,447	5,486
EN20	4,7829	4,368	4,3408	4,5013	4,977	4,702	4,368	5,838
EN21	4,08926	4,994	5,8851	6,2586	4,671	4,487	4,097	4,78
EN22	4,85352	4,503	4,3038	4,5149	4,671	4,536	4,491	5,345
EN23	8,19299	4,783	4,0567	4,1199	4,671	4,487	4,176	4,78
EN24	4,41254	7,191	4,2544	3,9155	5,13	4,536	4,85	3,51
EN25	4,60713	4,503	4,2667	4,4877	4,671	4,553	4,316	5,415
EN26	5,57383	1,565	4,5014	4,6375	3,14	4,055	4,429	4,992
EN27	4,93669	7,2	5,2427	4,4604	5,59	4,636	5,401	3,581
EN28	6,9297	5,717	4,6991	4,5558	4,824	4,503	4,622	3,933
EN29	4,30426	4,6	3,7849	3,9836	4,824	4,636	4	5,627
EN30	4,08926	4,657	3,9455	4,188	4,824	4,669	4,027	5,838

Table 9: e_j, d_j and w_j Values

	EC1	EC2	EC3	EC4	EC5	EC6	EC7	EC8
e_j	0.9943	0.9933	0.9942	0.9942	0.9894	0.9951	0.99449	0.9936
d_j	0.0057	0.0067	0.0058	0.0058	0.0106	0.0049	0.00551	0.0064
w_j	0.1111	0.1303	0.113	0.1132	0.2059	0.0948	0.10687	0.1248

Ranking Energy Companies via the ROV Method

As the first step of ranking the alternatives with the ROV method, the decision matrix in Table 7 is used. Since the normalization method in the algorithm of this method turns negative data into positive, analysis will be performed with the decision matrix (Table 7). In the second step, benefit-oriented criteria (EC2-EC7) are normalized using equation (12), and cost-oriented criteria (EC1, EC8) are normalized using equation (13). In the third step, the best and worst benefit functions are calculated using equation (14) for benefit-oriented criteria and (15) for cost-oriented criteria. In the last step, performance ranking is obtained using equation (16).

Table 10: Ranking Results Obtained by the PIV, ROV, GRA and MARCOS Methods

Firms	PIV	ROV	GRA	MAR-COS	Firms	PIV	ROV	GRA	MARCOS
EN1	30	30	28	30	EN16	18	18	23	20
EN2	24	22	18	21	EN17	26	26	27	26
EN3	12	12	11	12	EN18	4	5	8	5
EN4	13	13	14	13	EN19	22	24	24	23
EN5	7	7	6	7	EN20	20	21	21	19
EN6	10	10	9	9	EN21	9	9	10	10
EN7	17	16	15	17	EN22	19	19	25	24
EN8	14	14	16	15	EN23	28	28	29	28
EN9	3	2	2	3	EN24	8	8	5	8
EN10	11	11	13	11	EN25	21	20	22	22
EN11	6	6	7	6	EN26	29	29	30	29
EN12	5	4	4	4	EN27	2	3	3	2
EN13	1	1	1	1	EN28	16	17	19	16
EN14	15	15	12	14	EN29	25	25	20	25
EN15	27	27	26	27	EN30	23	23	17	18

Ranking Energy Companies via the GRA Method

Since the normalization method in the algorithm of this method turns negative data into positive, analysis will be performed with the decision matrix (Table 7). As the first step of ranking the alternatives with the GRA method, benefit-oriented criteria (EC2-EC7) are normalized using equation (18), and cost-oriented criteria (EC1, EC8) are normalized using equation (19). In the second step, the reference series is created by taking the largest value in the relevant column in the decision matrix. In the third step, the absolute value table is created using equation (21). In the fourth step, the grey relationship coefficients are calculated using equation (22). In the last step, grey relationship degree is calculated using equation (23).

Ranking Energy Companies via the MARCOS Method

In this section, the positive decision matrix in Table 8 will be used to apply the MARCOS method. In the first step, ideal (AI) and non-ideal (AAI) solutions, depending on the nature of the criteria, an expanded initial matrix was created by using equations (24) and (25). In the second step, the expanded initial matrix was normalized using equation (27) for benefit-oriented criteria (EC2-EC7) and equation (26) for cost-oriented criteria (EC1, EC8). In the third step, the normalized expanded matrix elements are multiplied by the criterion weights (Table 9) obtained by the Entropy method. In the fourth step, the degree of utility for the non-ideal solution was calculated using equation (29) and the degree of utility for the ideal solution was calculated using equation (30). Then, the utility function ($f(K_i)$) of the alternatives is defined using equations (33) and (34). In the last step, the alternatives are ranked based on the final values of the utility functions using equation (32).

The PIV, ROV, GRA and MARCOS steps given in the third section were applied respectively and all results are presented in Table 10.

SENSITIVITY ANALYSIS

Although MCDM methods are seen as reliable decision-making models, several relevant parameters can have serious effects on final decisions. Therefore, the initial model needs to be resolved under different conditions to observe the reliability of initial decisions and the effect of model parameters (Torkayesh et al., 2021: 8). In this section, the differences in the ranking results by changing the criteria weights are realized through sensitivity analysis. The analysis was performed by giving equal weight (1/8=0.125) to each criterion using equation 35 (Jahan et al., 2012, p. 413).

$$w_j = \frac{1}{n} \tag{35}$$

Table 11: Comparative Results

	Entropy Based				Equal weight based			
	PIV	ROV	GRA	MARCOS	PIV	ROV	GRA	MARCOS
EN1	30	30	28	30	29	28	15	29
EN2	24	22	18	21	22	21	17	18
EN3	12	12	11	12	12	11	11	11
EN4	13	13	14	13	13	13	12	13
EN5	7	7	6	7	7	7	8	7
EN6	10	10	9	9	10	10	9	10
EN7	17	16	15	17	16	16	16	17
EN8	14	14	16	15	14	14	19	14
EN9	3	2	2	3	2	2	2	3
EN10	11	11	13	11	11	12	14	12
EN11	6	6	7	6	6	6	7	6
EN12	5	4	4	4	5	3	3	2
EN13	1	1	1	1	1	1	1	1
EN14	15	15	12	14	15	15	13	15
EN15	27	27	26	27	27	27	25	27
EN16	18	18	23	20	18	18	23	19
EN17	26	26	27	26	26	26	28	26
EN18	4	5	8	5	4	5	6	5
EN19	22	24	24	23	23	24	27	24
EN20	20	21	21	19	21	22	24	22
EN21	9	9	10	10	9	9	10	9
EN22	19	19	25	24	19	19	26	23
EN23	28	28	29	28	29	29	29	28
EN24	8	8	5	8	8	8	5	8
EN25	21	20	22	22	20	20	22	21
EN26	29	29	30	29	30	30	30	30
EN27	2	3	3	2	3	4	4	4
EN28	16	17	19	16	17	17	21	16
EN29	25	25	20	25	25	25	20	25
EN30	23	23	17	18	24	23	18	20

n represents the number of criteria and the sum of the weights must equal 1.

According to Table 11, Entropy-based PIV, ROV, GRA, MARCOS rankings and EW-based PIV, ROV, GRA, MARCOS rankings are not exactly the same and there are small deviations. This also shows the effect of criterion weights on MCDM ranking results.

Application of Copeland Method for Integrated Evaluation Approach

The sustainability performance rankings of 30 energy companies obtained by the Copeland method are given in Table 12.

DISCUSSION

The model developed in this study to perform the corporate sustainability assessment of energy firms contains 23 indicators involving three dimensions of sustainability – economic, social and environmental. To more clearly indicate the change in the sustainability performance values of energy companies over different years, Figure 2 shows the improvement trend of the sustainability of energy firms from 2016 to 2018 is shown below. The results in Figure 2 are obtained using Copeland values. It is seen that Asian region companies (EN1-EN15) outperformed European region companies (EN16-EN30) during a three-year period.

Table 12: Copeland Ranking Results for All Dimensions

	Economic			Environmental			Social		
	2016	2017	2018	2016	2017	2018	2016	2017	2018
EN1	17	23	26	10	7	9	22	21	17
EN2	29	14	18	8	12	16	25	26	28
EN3	6	5	10	1	1	1	23	24	25
EN4	8	13	11	17	8	12	4	3	9
EN5	13	8	6	4	6	5	9	14	16
EN6	11	9	8	2	2	2	6	6	7
EN7	15	17	14	13	13	14	16	15	10
EN8	10	16	13	18	23	27	8	12	14
EN9	5	4	2	3	4	3	22	20	22
EN10	12	10	9	27	24	25	1	1	1
EN11	3	6	5	7	5	4	7	8	5
EN12	2	2	3	12	9	11	10	7	8
EN13	1	1	1	16	10	13	2	4	3
EN14	25	15	12	9	6	5	5	3	2
EN15	28	26	23	22	15	15	23	23	26
EN16	21	21	16	18	17	18	24	25	27
EN17	26	24	22	14	11	10	18	19	24
EN18	14	7	4	11	8	6	3	2	6
EN19	20	20	20	23	21	20	12	17	15
EN20	9	13	17	19	16	18	19	22	23
EN21	7	12	8	6	2	8	15	9	19
EN22	19	23	19	28	25	26	13	13	16
EN23	27	25	24	20	14	17	11	11	13
EN24	22	11	7	15	11	19	19	18	20
EN25	18	18	18	25	19	22	17	16	18
EN26	16	20	25	29	26	28	3	5	12
EN27	4	3	2	21	18	21	21	23	21
EN28	24	21	15	26	20	24	14	10	4
EN29	23	22	21	5	3	7	20	22	24
EN30	17	19	17	24	22	23	9	17	11

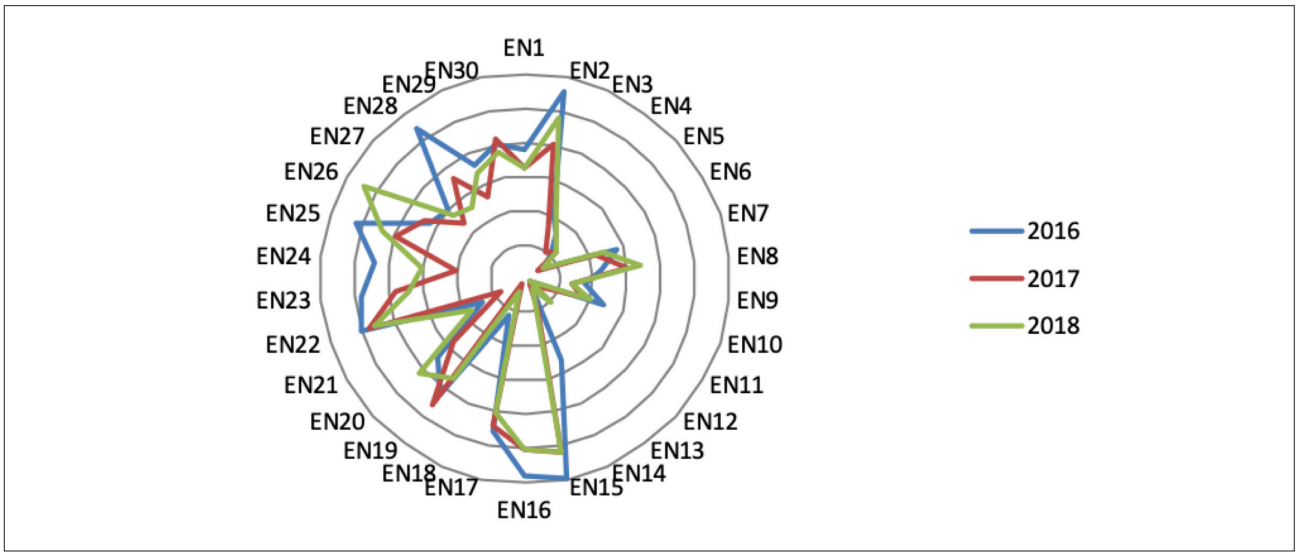

Figure 1: The Average Sustainability Performance of Energy Companies Relating to Three Years

The criteria weights are part of the MCDM methods and affect the evaluation process (Zavadskas and Podvezko, 2016). As can be seen from the studies carried out, the importance of the criteria has a strong effect on the MCDM results (Zavadskas and Podvezko, 2016; Alemi-Ardakani et al. 2016; Kumar and Parimala, 2019). Table 10 shows the criteria weights for all dimensions and years. It was determined that criterion weights generally vary according to years and dimensions. Many studies have obtained similar results using the objective weighting method (Wicher et al. 2019; González et al. 2016; Zhang et al. 2014). This situation is directly related to the different data sets used. On the other hand, in studies where subjective weighting is used, the weights of the criteria do not change according to years and dimensions (Yi et al., 2019). However, studies show that objective weighting is more advantageous than subjective weighting (Deepa et al., 2019).

According to Table 13, the importance of the criteria in the economic dimension has changed over the years. In the social and environmental dimension, the most important and least important criteria remained the same in all three years. The criteria weights vary according to the data set used and the accuracy of comparing them with different study results is debatable. However, to give an example, Yalçın and Karakaş (2019) determined the most important and least important criteria in their study as follows; environmental dimension (recycled waste amount: max; electricity consumption: min), economic dimension (total assets: max; asset profitability ratio: min), social dimension, total vehicle accident rate: max; total number of employees: min). Öztel et al. (2018) determined the most important and least important criteria in their study as follows; environmental dimension (disposal amount: max; total water consumption: min), economic dimension (Operating profit ratio: max; number of shares: min), social dimension (occupational accident frequency rate: max; total number of employees: min). Alp et al. (2015) determined the most important and least important criteria in their study as follows; environmental dimension (nitrogen oxide amount: max; per million euros) oscillation: min), economic dimension (stock minimum price: max; operating margin ratio: min), social dimension (senior employee ratio: max; employee ratio between 31-50 years: min).

Table 12 presents the final ranking results obtained by the Copeland method. Certainly that the companies that ranked first based on all three dimensions and every three years did not change. In terms of economic sustainability; EN13 (Thai Oil) company operating in Thailand ranked first in every three years. On the other hand, 73.33% of the top five companies operate in the Asian region, while 26.6% operate in the European region. While 73% of the top five companies in the Asian region operate in Thailand, 27% operate in Turkey.

EN3 (Aygaz), operating in Turkey, ranked at the top in terms of environmental sustainability performance in each of the three years. The company that ranked lowest is EN26 (Naturgy Energy Group, S.A) operating in Spain.

Table 13: The Criteria Weights for All Dimensions and Years

Economic dimension								
	EC1	EC2	EC3	EC4	EC5	EC6	EC7	EC8
2016	10.75%	10.66%	11.32%	11.41%	13.43%	20.25%	10.51%	11.68%
2017	11.19%	11.03%	12.06%	12.14%	16.63%	12.81%	10.87%	13.27%
2018	11.11%	13.03%	11.30%	11.32%	20.60%	9.48%	10.69%	12.48%
Social dimension								
	SO1	SO2	SO3	SO4	SO5	SO6	SO7	
2016	14.44%	11.08%	10.76%	13.22%	18.01%	12.74%	19.75%	
2017	13.60%	12.16%	11.00%	13.10%	17.54%	12.78%	19.82%	
2018	14.93%	12.09%	11.57%	11.90%	18.14%	12.62%	18.74%	
Environmental dimension								
	ENV1	ENV2	ENV3	ENV4	ENV5	ENV6	ENV7	ENV8
2016	11.36%	10.94%	10.14%	19.35%	10.87%	9.90%	12.74%	14.71%
2017	11.38%	10.69%	9.93%	20.50%	10.58%	9.64%	12.76%	14.52%
2018	11.44%	10.91%	10.08%	19.76%	10.81%	9.76%	12.75%	14.49%

80% of the top five companies operate in the Asian region, while 20% operate in the European region. While 50% of the top five companies in the Asian region operate in Thailand, 42% operate in Turkey. In terms of social sustainability performance, EN10 (PTT Public Company Limited), operating in Thailand, ranked at the top in each of the three years. 73.33% of the top five companies operate in the Asian region, while 26.6% operate in the European region. A total of 91% of the companies in Asia, which are ranked among the top five, operate in Thailand.

CONCLUSIONS, BOUNDARIES, AND FUTURE RESEARCH DIRECTION

This paper proposed an evaluation approach that utilizes MCDM methods to evaluate the corporate sustainability performance of 30 energy firms operating in Asian and European regions for the 2016-2018 period. In this study, a framework was created to measure the corporate sustainability performance of companies operating in the energy sector. The purpose of establishing such a framework is to reveal the sustainability performance levels of the companies and compare them based on different countries and regions.

According to the final results obtained by the Copeland method, it has been determined that top-ranking companies operate in Thailand. On the other hand, it has been determined that the companies that rank first based on all three dimensions (economic, environmental, social) and three years (2016-2018) are located in the Asian region. It can be concluded that energy companies operating in the Asian region are more sustainable. The most sustainable country in the Asian region is Thailand.

The common factors that enable companies operating in Thailand to be at the forefront in terms of economic, environmental and social sustainability performance were examined. Accordingly, the effect of financial ratios (current ratio, leverage ratio) is great in providing superiority in terms of economic dimension. In terms of the social dimension, the high average training hours and the high rate of female employees ensured that the companies were at the forefront. It can be said that the total energy consumption, the amount of waste water, the total greenhouse gas emission, the low amount of total waste and the high amount of recycled waste increase the environmental sustainability performance of Thai companies.

With a general evaluation, it has been determined that the economic sustainability of the companies with high profitability is high. In order to increase environmental sustainability performance, it is necessary to increase the use of renewable energy sources that do not harm the nature. In order to increase social sustainability performance, companies need to give more importance to education and increase the rate of female employees. The five important contributions of this study can be indicated as follows:

- Provided a research strategy using the integrated MCDM model (Entropy-PIV-ROV-GRA-MARCOS) to tackle complex sustainability issues
- This study is the first in the literature in terms of the model and approach used.
- The suitability of the integrated method used and the PIV, ROV and MARCOS methods for corporate sustainability measurement was tested for the first time.
- The results obtained with the four methods used were able to be compared.
- Providing the opportunity to compare countries, regions and companies with each other in terms of corporate sustainability performance.

The integrated model used in this study is a suitable model for corporate sustainability performance measurement. It is thought that the results obtained will contribute to the development of the energy sector. This study has two main limitations: i. The alternatives included in the scope of the study were selected from among the companies that report based on the GRI guide. ii. Accessibility was the main reference point when determining the criteria. For this reason, many companies that do not report under the GRI guidelines and whose data are not available were excluded from the analysis. This has caused many regions in the GRI database (Africa, Latin America, North America, Oceania) to be excluded from the analysis. On the other hand, in this study, in which a common indicator pool was created, some criteria considered important such as “renewable energy usage rate”, “energy-saving amount”, “environmental investments and expenditures”, “distribution of employees on the board of directors by age”, and “absenteeism rate” could not be included in the scope of the study since the indicators announced by the companies were different from each other.

In future studies, performance measurement can be carried out to cover different periods by expanding the alternative and criteria set. The weighting methods such as AHP and DELPHI, which include subjective evaluations of decision-makers, can be used instead of Entropy method. In the selection process of alternatives, a different perspective can be brought to the study by choosing DJSI instead of the GRI database.

Appendix A

Table A1. Economic dimension decision matrix

2016	EC1	EC2	EC3	EC4	EC5	EC6	EC7	EC8	2017	EC1	EC2	EC3	EC4	EC5	EC6	EC7	EC8
EN1	10	-0,20	1,11	1,07	-0,11	0,50	0,28	0,78	EN1	8	-0,15	0,28	0,28	-0,09	0,27	0, 32	0,68
EN2	4	-0,16	0,71	0,53	-0,09	-0,94	0,77	0,91	EN2	5	0,13	0,69	0,50	0,08	0,23	0,69	0,68
EN3	18	0,37	1,38	1,18	0,10	0,15	1,60	0,35	EN3	16	0,42	1,24	0,99	0,12	0,20	1,71	0,41
EN4	87	0,10	1,69	1,10	0,08	0,13	1,42	0,57	EN4	98	0,13	1,52	0,80	0,07	0,14	1,51	0,54
EN5	60	0,47	1,49	1,49	0,04	0,10	0,12	0,58	EN5	61	0,67	2,26	2,26	0,06	0,16	0,15	0,57
EN6	36	0,18	1,43	1,06	0,08	0,18	0,46	0,48	EN6	42	0,19	1,53	1,12	0,08	0,18	0,47	0,45
EN7	254	0,01	0,76	0,27	0,06	0,12	0,98	0,53	EN7	272	0.02	0,96	0, 36	0,06	0,13	1,07	0,53
EN8	1009	-0,000003	2,54	2,46	0,03	0,07	0,16	0,47	EN8	1109	0,003	1,94	1,82	0,04	0,08	0, 35	0,49
EN9	18	0,72	1,27	0,97	0,08	0,22	3,87	0,66	EN9	18	0,90	1,40	1,00	0,10	0,27	4,43	0,64
EN10	1313	0,10	2,18	1,84	0,06	0,13	0,77	0,48	EN10	1475	0,14	2,21	1,86	0,08	0,17	0,89	0,44
EN11	19	0,13	2,42	2,42	0,06	0,10	0,53	0,35	EN11	20	0,12	2,44	2,44	0,06	0,10	0,50	0,37
EN12	31	0,06	1,7	0,84	0,15	0,23	2,61	0,31	EN12	30	0,05	1,7	0,86	0,15	0,21	2,74	0,30
EN13	28	0,31	3,4	2,4	0,11	0,21	1,26	0,49	EN13	30	0,37	3,8	2,7	0,12	0,22	1,48	0,44
EN14	355	0,06	1,08	0,98	0,07	0,13	0,24	1,12	EN14	334	0,06	0,76	0,68	0,07	0,13	0,25	0,46
EN15	2	-0,00001	0,47	0,47	-0,0005	0,03	0,16	1,02	EN15	30	0,004	0,51	0,51	0,003	0,03	0,41	0,91
EN16	450	0,0745	1,21	1,15	0,02	0,07	0,47	0,68	EN16	475	0,09	1,21	1,15	0,03	0,10	0,58	0,70
EN17	661	0,26	0,86	0,81	0,02	0,06	0,06	0,69	EN17	681	0,31	1,13	1,09	0,02	0,06	0,06	0,68
EN18	109	1,75	0,94	0,93	0,05	0,17	0,13	0,73	EN18	129	2,06	2,50	2,45	0,05	0,17	0,14	0,69
EN19	1128	1,33	0,72	0,56	0,05	0,16	0,59	0,71	EN19	917	1,38	0,73	0,57	0,05	0,16	0,63	0,70
EN20	503	0,09	2,05	1,93	0,07	0,26	0,41	0,74	EN20	482	0,12	1,06	0,97	0,07	0, 3	0,47	0,79
EN21	69	0,689	2,25	2,20	0,03	0,07	0,23	0,62	EN21	63	0,72	2,20	2,16	0,04	0,11	0,23	0,60
EN22	524	0,141	1,14	1,09	0,03	0,09	0,62	0,69	EN22	552	0,17	1,09	0,96	0,03	0,10	0,64	0,69
EN23	2367	0,423	0,77	0,65	0,03	0,07	0,27	0,62	EN23	2776	0,46	0,83	0,71	0,03	0,07	0,28	0,61
EN24	271	0,20	0,76	0,46	0,005	0,01	0,77	0,48	EN24	234	2,80	1,02	0,56	0,06	0,11	0,96	0,40
EN25	360	0,14	1,26	1,20	0,02	0,08	0,42	0,71	EN25	390	0,19	1,38	1,33	0,03	0,11	0,47	0,68
EN26	974	1,22	1,14	1,04	0,03	0,07	0,46	0,60	EN26	1031	0,94	1,46	1,36	0,03	0,07	0,49	0,61
EN27	507	2,83	1,52	0,85	0,10	0,20	1,08	0,47	EN27	574	3,73	1,77	1,01	0,12	0,20	1,57	0,42
EN28	2501	1,11	1,08	0,84	0,03	0,06	0,53	0,52	EN28	1892	1,29	1,23	0,91	0,04	0,07	0,69	0,50
EN29	167	0,17	0,42	0,39	0,04	0,13	0,12	0,68	EN29	171	0,26	0,61	0,59	0,04	0,15	0,12	0,72
EN30	82	0,32	0,76	0,76	0,04	0,18	0,13	0,78	EN30	66	0,34	0,91	0,90	0,04	0,18	0,13	0,77

Appendix B

Table B1. Environmental dimension decision matrix

2016	ENV1	ENV2	ENV3	ENV4	ENV5	ENV6	ENV7	ENV8	2017	ENV1	ENV2	ENV3	ENV4	ENV5	ENV6	ENV7	ENV8	2018	ENV1	ENV2	ENV3	ENV4	ENV5	ENV6	ENV7	ENV8
EN1	0,54	2,2	1,2	98,69	10,4	0,0001	93,46	100	EN1	0,80	2,7	1,6	99,54	13,1	0,0001	66,56	100	EN1	0,69	2,2	1,3	99,87	10,0	0,00006	84,11	100
EN2	58,1	8,1	4,4	96,29	1,5	0,001	22,11	77,89	EN2	68,0	8,0	5,1	96,39	1,9	0,006	7,69	6,78	EN2	58,2	7,2	4,6	96,07	1,7	0,64	0,09	0,043
EN3	0,17	0,15	0,02	38	0,06	0,01	5, 30	98,11	EN3	0,16	0,110	0,01	32,73	0,06	0,01	4,79	99,74	EN3	0,13	0,10	0,01	33,72	0,05	0,01	5,62	99,50
EN4	14,4	2,4	1,0	98,45	0,84	0,01	81,16	72,82	EN4	14,7	2,5	1,00	97,64	0,9	0,002	80,74	94	EN4	13,4	2,4	0,91	98,46	0,9	0,02	30,26	31,92
EN5	42,8	1,4	6	99,93	1,4	0,07	0,18	83,69	EN5	42,0	1,2	5,8	99,88	1,2	0,05	0,45	60,09	EN5	48,4	1,1	6,7	99,87	1,1	0,05	0, 39	66,75
EN6	69,9	2,5	12	100	2,6	0,23	0,52	98,60	EN6	67,8	2,4	11,3	100	2,4	0,23	0,52	97,88	EN6	68,2	2,6	11,5	100	2,5	0,24	0,44	98,52
EN7	50,6	47,6	7,5	99,99	28,6	0,04	33,82	76	EN7	52,1	41,5	7,6	99,99	22,1	0,05	48,21	57,71	EN7	59,0	42,3	8,4	99,99	24,8	0,06	30,61	57,77
EN8	113,2	89,5	15,4	83,77	8,8	0,27	91	86,20	EN8	119,5	92,5	16,6	83,73	9,0	0,34	95,34	30	EN8	167,6	101,9	17,9	82,12	10,9	0,29	93,27	3,96
EN9	0,07	0,11	0,01	52,69	0,08	0,002	74,63	96,91	EN9	0,10	0,09	0,01	60,07	0,07	0,002	84	86,39	EN9	0,1	0,13	0,01	57,95	0,15	0,004	90,25	85,91
EN10	47,1	3,6	10,7	97	1,5	16,9	28,33	40,77	EN10	47,7	3,6	11,3	97,97	1,4	20,0	17,10	30,22	EN10	46,8	3,7	10,6	97,87	1,41	20,5	19, 37	24,72
EN11	121,8	31,7	9,3	99,61	4,5	0,01	14,70	99,22	EN11	101,7	22,1	8,1	99,54	4,0	0,01	14,93	98,51	EN11	87,5	19,7	7,0	99,52	4,0	0,003	14,72	98,99
EN12	20,1	3,0	1,4	99,84	2,0	0,01	96,70	97,82	EN12	19,0	2,9	1,3	99,87	1,9	0,01	97,25	99,82	EN12	19,9	2,9	1,2	99,88	1,7	0,02	81,19	88,68
EN13	27,4	23,3	3,7	100	19,5	0,01	94,36	91	EN13	29,4	22,9	3,4	100	18,7	0,01	94,66	94,89	EN13	31,6	22,9	3,5	100	18,6	0,01	96,01	95,15
EN14	11,3	3,7	1,2	67,64	2,1	0,22	0,54	0,67	EN14	11,2	4,1	1,3	66	1,9	0,20	0,53	1,07	EN14	12,3	4,2	1,3	63,95	1,1	0,22	0,53	1
EN15	4,8	30,8	1,1	99,49	0	0,23	49,57	5,60	EN15	5,3	36,3	0,96	99,64	0	0,14	19,15	5,67	EN15	2,5	73,6	1,8	99,55	0,15	0,15	18,49	23,43
EN16	177,8	112,0	6,6	98,18	3,2	0,53	15,96	47	EN16	266,0	124,0	8,2	98,50	4,5	0,62	16,87	52	EN16	239,6	94,0	7,6	98,56	4,3	0,64	17,43	52
EN17	220,6	1,7	19,5	97,19	1,5	0,48	1, 35	61	EN17	291,0	1,9	24,0	96,59	1,8	0,67	0,94	46	EN17	234,8	1,7	19,0	96,84	1,5	0,35	1,55	78
EN18	3,9	0,11	0,29	90,70	0,02	0,004	42,10	60,99	EN18	4,6	0,13	0,29	92,06	0,02	3,1	31,26	68	EN18	4,7	0,10	0,30	90,06	0,02	0,004	40,73	78
EN19	615,7	61,0	30,2	97,21	20,3	0,05	18,63	66	EN19	684,0	66,0	35,5	98	78,2	0,06	19,70	78,72	EN19	615,3	56,5	32,7	97,03	70,3	0,08	13,20	85,95
EN20	182,8	1,4	14,4	100	1,3	0,16	6,07	29,10	EN20	214,0	2,0	16,0	100	1,9	0,25	2,31	24,44	EN20	271,8	2,4	17,7	100	2,3	0,28	2,56	33, 38
EN21	21,3	223	7,8	15,56	222,8	0,01	94,24	59,90	EN21	19,9	205,0	3,3	33,95	205,0	0,01	93,24	85	EN21	17,7	203,0	2,5	40,22	202,8	0,01	93,75	82
EN22	23,6	422,1	1,7	82,54	393,0	2,5	4, 35	8,45	EN22	18,8	430,0	1,6	88,04	364,0	2,4	6,90	5,68	EN22	19,5	421,8	1,5	90,13	382,0	2,8	1,95	2,73
EN23	442,2	1,9	31,0	85,49	1,8	0,99	1,07	48,33	EN23	440,5	2,0	30,1	86,87	1,9	1,1	0,86	43,02	EN23	400,7	2,0	26,8	90,75	1,9	0,56	2,34	54
EN24	21,25	29,9	1,8	93,85	26,0	0,03	40,19	51,12	EN24	23,4	34,4	1,9	95,81	30,2	0,02	57,97	51,63	EN24	23,0	36,4	1,9	95,81	31,8	0,03	56,95	36,53
EN25	55,34	490,6	5,5	97,31	480,9	0,47	7,03	64,51	EN25	54,6	518,0	3,5	97,25	518,0	0,45	8,45	71,65	EN25	53.1	504,9	3,5	96,72	503,6	0,49	7,90	69,90
EN26	248,2	816,7	19,6	99,45	783,4	1,0	0,92	14,98	EN26	248,6	907,0	20,6	99,44	879,7	0,82	1,19	18,62	EN26	218,2	777,5	18,4	99,42	753,7	0,45	1,87	34,54
EN27	48,6	82,6	13,0	100	46,1	0,17	43,50	56,94	EN27	31,7	88,4	14,4	100	51,3	0,21	47	53,87	EN27	38,2	90,3	15,0	100	51,6	0,18	47,41	31,21
EN28	218,1	54,2	25,5	97,81	44,0	0,27	20,74	19,49	EN28	214,0	55,7	23,3	98,33	34,8	0,39	10,21	7,31	EN28	208,9	53,5	22,3	98,18	43,0	0,22	32,30	12,77
EN29	11,0	4,2	1,5	98,09	4,1	0,05	6,78	77	EN29	12,6	4,2	1,5	98,10	4,1	0,05	7	80	EN29	13,3	4,1	1,5	97,91	4,1	0,03	14,49	60
EN30	804,7	0,16	136,7	45,35	1,4	4,9	37,29	92,71	EN30	813,0	0,17	148,3	51,11	1,2	4,8	46,87	87,22	EN30	790,7	0,18	127,1	49,59	1,8	6,8	51,43	85,61

Appendix C

Table C1. Social dimension decision matrix

2016	SO1	SO2	SO3	SO4	SO5	SO6	SO7	2017	SO1	SO2	SO3	SO4	SO5	SO6	SO7	2018	SO1	SO2	SO3	SO4	SO5	SO6	SO7
EN1	25	18	0	0	36	209	22	EN1	21,2	30	0	0	34	194	21,13	EN1	9,2	25	0	0	43	200	20,5
EN2	22,12	163	0	0	9,3	782	4,73	EN2	34,84	237	0	0	20,8	1019	8,24	EN2	29,17	201	1	0	26,4	977	8,90
EN3	26,73	330	0	0	47	1182	9,48	EN3	20,75	261	0	0	38	1195	9,87	EN3	18,03	147	0	0	39	1115	11,03
EN4	3,20	121	0	0	44	1196	29,18	EN4	4,0	104	0	0	45	1240	30,16	EN4	3,55	67	0	0	46	1254	29,74
EN5	2,76	22	0	0	28,07	995	30,35	EN5	4,30	74	0	0	26,62	1328	27,26	EN5	2,86	68	0	0	30,39	1361	23,14
EN6	7,47	50	0	0	58,37	726	26,03	EN6	7,42	56	0	0	52,93	736	26,63	EN6	4,54	36	0	0	60,10	739	27,06
EN7	2,66	125	0	0	32,67	5418	17,29	EN7	1,11	32	0	0	38	5498	16,82	EN7	0,16	9	0	0	48	5466	17,23
EN8	13,8	18685	7	0	33,6	90267	21	EN8	14	7902	5	0	16,1	84061	19,20	EN8	14	9551	1	0	15,0	78933	18,80
EN9	6,73	90	0	0	12,22	810	18,40	EN9	6,02	81	0	0	17,71	842	19,24	EN9	6,05	82	0	0	17,35	872	20,64
EN10	3,68	149	0	0	49,84	4616	33,88	EN10	3,64	144	0	0	39,80	4697	34,43	EN10	4,29	222	0	0	73,68	3715	38
EN11	3,85	48	0	0	27,79	439	33,03	EN11	6,95	65	0	0	33,80	445	33,26	EN11	3,1	40	0	0	47	453	33,33
EN12	3	7	0	0	47	455	22,20	EN12	2	30	0	0	49	472	23,31	EN12	1,97	40	0	0	53	496	23,79
EN13	3,14	66	0	0	62,5	1437	26,51	EN13	3,25	55	0	0	49,5	1447	26,81	EN13	2,91	70	0	0	67,5	1480	26,49
EN14	2,3	1853	0	0	6,6	46803	31,72	EN14	4,1	1196	0	0	10,5	46772	32,87	EN14	4,1	3558	0	0	28,6	49489	32,63
EN15	13,68	124	0	0	25,04	643	14,93	EN15	10,11	141	0	0	20,43	673	14,56	EN15	10,45	120	0	0	10,39	919	15,56
EN16	6,8	728	0	8	16,8	9777	15,32	EN16	5,9	906	0	3	18,7	11416	16,06	EN16	6,3	956	0	9	20,3	11196	16,45
EN17	6,38	722	0	3	37	11992	24	EN17	9,04	939	0	2	33	11657	24	EN17	10,32	1174	0	5	41	11631	25
EN18	4,35	103	0	0	61,75	1337	23	EN18	4,64	72	0	0	65,14	1426	23	EN18	4,8	110	0	0	61,44	1449	27
EN19	8,90	556	0	0	45,8	9694	22,36	EN19	7,3	256	1	0	35,3	9706	23,16	EN19	4,58	393	0	0	37,9	9763	23,34
EN20	11	516	0	0	27,5	10310	17,62	EN20	9	872	1	0	25,0	10237	18,07	EN20	12	1014	0	0	23,0	10711	17,61
EN21	6,8	71	0	0	39,3	715	20,98	EN21	10,2	36	0	0	61,9	714	20,87	EN21	13,4	61	0	0	49	737	20,08
EN22	3,4	310	0	0	29,3	8502	24	EN22	3,7	291	0	0	28,6	8847	24,30	EN22	5,9	391	0	0	29,8	8777	24,76
EN23	7,3	2434	0	2	46	34082	23,93	EN23	7,9	3210	0	3	42	34255	23,43	EN23	10,7	3413	0	2	45	34078	23,36
EN24	10,37	1514	0	0	15,19	10861	21	EN24	7,55	771	0	0	15,52	10884	24	EN24	9,35	718	0	0	20,9	10849	24
EN25	4,9	108	0	0	15,6	6226	25,23	EN25	2,6	152	0	0	16,5	6285	25,51	EN25	6,2	313	0	0	18,9	7042	25,66
EN26	7,1	1059	0	0	51	17229	29	EN26	6,4	945	0	0	38,4	15375	29	EN26	17,4	503	0	0	49,9	12700	31
EN27	4,22	323	0	6	40	4786	20	EN27	7,55	532	0	3	28,77	4980	21	EN27	6,2	603	0	3	39	5250	21,73
EN28	13	2445	0	6	41	25469	34,45	EN28	9	3157	0	6	40	25085	35,13	EN28	23	3810	0	0	45	25288	36,47
EN29	6,4	144	0	0	28,5	2883	12,80	EN29	7,4	146	0	0	29,2	2919	13,46	EN29	13	196	0	0	35,7	3016	13,89
EN30	1,5	186	0	0	61	3468	11,71	EN30	5,9	243	0	0	50	3508	12,31	EN30	2,4	420	0	0	55	3843	13,45

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An Economic Analysis on the Use of Resources Allocated for Defense: An Empirical Study on Turkey

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ABSTRACT

In this study, the aim was to investigate the relationship between Turkey's defense expenditures and its gross domestic product, foreign debt, and unemployment. Data was taken from a period between 1998 and 2020, and was examined using both the Toda-Yamamoto causality test and the time-varying recursive evolving window causality test developed by Shi, Phillips and Hurn (2018). According to the findings of the Toda-Yamamoto causality test, it has been observed that there is causality from defense expenditures to gross domestic product, that is, the change in defense expenditures affects the gross domestic product. Similarly, causality has been determined from defense expenditures to external debt. Test. According to the Shi, Phillips, and Hurn (2018) causality test findings, there was no causality from the expenditures for defense to unemployment but for all others (from expenditures on defense to GDP, from GDP to expenditures on defense, from expenditures on defense to external debt, from external debt to expenditures on defense, and from unemployment to expenditures on defense) a causality was observed. Therefore, it is possible to state that the change in defense expenditures will have an impact on foreign debt. In this respect, the findings are in agreement with the literature. The increase in defense expenditures will increase the production of the defense industry, the export of this product will result in a resource inflow to the country and the gross domestic product will increase. On the other hand, in some countries, defense expenditures will be financed by debt from foreign sources, which will cause an increase in their foreign debt.

Keywords: Defense Resources; Defense Expenditures; Gross Domestic Product; Causality; Foreign Debt; Unemployment

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INTRODUCTION

There are many sub disciplines found under the roof of economics. Some major sub disciplines are; microeconomics, macroeconomics, labor economics, public economics, etc. One of the newest sub disciplines relates to the defense sector and is referred to as defense economics. Although studies on this particular area began in times of World War II, only recently that its importance was actually understood and the number of studies on it increased. It was the seminal work of Benoit (1973, 1978) that sparked up the area to investigate the relationship between the government's spending on the defense sector and its contribution to economic growth. A country's defense system has a crucial role in the way that it is run whether it's for protecting its borders, its national security, or for its overall industrialization and development. For this reason, it requires a carefully planned strategy and an optimal allocation of resources.

Governments in both developing and developed countries place great importance on defense spending, making it a major component of their expenditures. Of course, the burden for defense varies among different countries as economic, social, political, or technological factors all contribute to this burden within the domestic and international arena (Tekeoglu 2008). Therefore, it can be said that the determination of the amount of resources allocated for defense is affected by economic factors as much as political and military factors.

Today, the struggle to obtain scarce resources all over the world causes tension, conflict and power struggles at various levels among countries. Examples can be; the Russia-Ukraine war, Israel-Palestine conflict, tensions experienced in Syria, Afghanistan, Iraq, conflicts among Azerbaijan-Armenia, Turkey-Greece, USA-China, Iran-US-Israel, and the Myanmar conflict. On top of that, the approaches and policies of global alliances such as NATO and the European Union cause countries to allocate more resources to defense. Likewise, imperialist demands and

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desires of countries such as USA, Russia, England, France, and Germany increase these tensions experienced nearly in every region of the world, and cause these countries to be more exposed to terrorist and irregular attacks. Thus these countries reconsider their defense needs and the resources allocated to defense.

Although the determination of the resources allocated to defense seems to be an ordinary subject in the literature, it is increasing its importance day by day due to the developments mentioned above. The unrealistic and insincere approaches of the great states to the preservation and maintenance of peace in the world mean that countries can allocate more resources for their own defense now and in the future in comparison to their other expenditures.

When a country allocates more resources to defense, it becomes a market for countries with large production power in the arms production sector, and sometimes regional conflicts can take place for these markets because weapons have high added value and therefore, large incomes can be obtained with the sale of weapons in these markets. Large arms producer and dealer countries can become a great economic, political and military power thanks to the privileges and incomes they obtain through arms production, and they can have an important position within alliances such as the United Nations, NATO, and the European Union, and cause a change in international balances.

Although there has been a symmetrical defense approach accepted by these countries in the past, recently, it is seen that a more asymmetrical defense approach has been utilized (Kucuksahin et al. 2007). Deterrence and protecting national interests form the basis of this understanding and, hence, a more proactive, rather than reactive, the approach is sought. In other words, a country must always be ready to protect its security.

Based on their economic, political, and cultural interests, the amount each government is willing to allocate to their defense spending will vary. The recent trend among defense economists has been to continue the work of Benoit (1973) and establish a relationship between the amount of government spending on defense and the country's economic growth. Unfortunately, earlier studies provide mixed results for this relationship due to differences in the countries observed, the time periods are taken, or from using different methodologies (Chen et al. 2014).

However, as the number of studies increases and the topic become more mature it is likely that impact of variables like economic development, geographic locations, growth on defense expenditure, and the implications they have on the defense-growth nexus will be understood and addressed in detail. This research was conducted with the purpose of contributing to existing pool of work on the topic through determining the relationship and interactions of defense expenditure with the macroeconomic variables such as gross domestic product, foreign debt, and unemployment in Turkey. Although there are many studies on the topic utilizing various different techniques, this study uses yearly data from 1998 to 2020 to use in the Toda-Yamamoto Causality Test and the time-varying recursive evolving window causality test developed by Shi, Phillips and Hurn (2018). It contributes to literature first and most importantly due to the country it is applied to. Turkey is located in a unique geography and because of it has been in the middle of many conflicts. Due to its geopolitical position, has been exposed to constant terrorism, and in recent times have experienced conflicts with Greece, Syria, the USA, and Russia. Secondly, the data used is still more relevant when compared to previous literature, from which much information can be gathered on how Turkey allocates its resources for defense.

The study starts with an introduction in Section 1 providing a background on the issue. Section 2 will discuss the theoretical background to the relationship between GDP, foreign debt, unemployment with defense expenditure. Section 3 will then follow with the relevant review of past literature in order to observe and analyze the findings from previous studies. Section 4 will provide the data used and the methodology applied followed by the results of the tests in Section 5. In the last part, Section 6, the conclusion will be drawn based on the results of the study.

GROSS DOMESTIC PRODUCT, FOREIGN DEBT, UNEMPLOYMENT AND DEFENSE EXPENDITURE

Gross domestic product (GDP) can be expressed as an economic measure that tries to quantify value of the products in the market which are produced at a specific period of time. GDP is calculated annually for any country and, in general, includes all government, investment, and consumption expenditures (Mishkin 2004). Generally, the relationship among external debt and GDP as well as growth is inverse in nature. This is because when external debt increases, the country's increased external debt payments will limit government

Table 1: Turkey's GDP between 1988-2020 ($ Billion)

Years	GDP	Years	GDP	Years	GDP
1988	90.853	1999	256.386	2010	776.986
1989	107.143	2000	274.303	2011	838.786
1990	150.676	2001	240.303	2012	880.556
1991	150.028	2002	240.249	2013	957.799
1992	158.459	2003	314.595	2014	938.934
1993	180.170	2004	408.865	2015	864.314
1994	130.690	2005	506.315	2016	869.683
1995	169.486	2006	557.076	2017	858.989
1996	181.476	2007	681.321	2018	778.382
1997	189.835	2008	770.449	2019	761.425
1998	275.967	2009	649.289	2020	649.440

Source: World Bank

and investment expenditures and hence, the growth rate will decrease (Cesares 2015; Checherita et al. 2010). The size of external debt is measured by the dividing debt by the GDP. It is a public service for the state to provide the country's defense. The power created to provide this service is called the defense power, and the expenditures for the defense power are called defense expenditures. Defense expenditures can be seen as an invoice given for the service provided for the country's defense. Defense spending can be grouped under 3 main headings: expenditures for military/defense/strategic purposes; expenditures for former military forces/activities, and expenditures for other forces (Giray 2004).

Table 1 below shows the GDP values obtained for Turkey, starting from 1988 until 2020. These values will also be utilized in the study to understand their relation to defense expenditures. Figures indicate that especially after 2005, significant increases were recorded in GDP, which lasted until 2017, and then a decrease was observed until 2020.

Turkey's defense expenditure values, external debt ratio, unemployment rates as well as its defense expenditure/GDP ratio between 1988 and 2020 is given in Table-2 below. The figures indicate that while Turkey's defense expenditure was an average of 11-12 billion dollars annually until 2015, a significant increase was recorded in 2016 until 2020. From the results defense expenditures/GDP ratio is observed to be around 2.4% between the years examined. According SIPRI (2021), the ratio of defense expenditures to GDP of USA, Russia, England, France, Germany, Italy, Spain, Greece, and Turkey is around 3.7%, 4.3%, 2.2%, 2.1%, 1.4%, 1.6%, 1.4%, 2.8% and 3% respectively. Between the years examined, the ratio of external debt to GDP was generally between 40% and 50%. According to Table-2, while the unemployment rate in Turkey was around 10% between 1988 and 2018, a significant increase was observed in 2019 and 2020.

Studies show that there are a few different ways that defense expenditure can affect economic growth. Although some argue that this effect is positive, as in a positive correlation (Benoit 1978; Ateşoglu and Mueller 1990; Ateşoglu 2004; Yıldırım et al. 2005), there are studies indicating that an increase in defense expenditure can decrease growth or prevent it (Deger 1986; Deger and Smith 1983; Heo 1999; Kwabena 1989; Lim 1983; Shieh et al. 2002; Grobar and Porter 1989; Lipow and Antinoiri 1995). Ali and Ather (2015) express that spin-off effects, allocation of resources, and creating new resources, are the three main mechanisms, which influence economic growth. Deger (1986) explains that in conditions under which supply potential is more than the aggregate demand, then every additional demand that is generated can be very productive. In other words, increasing defense expenditure will cause a higher aggregate demand that can result in higher utilized capital stock, more employment opportunities, and hence, a boost in investments leading to a short-run multiplier effect. Defense workers may also utilize this increased expenditure through engaging in research and

Table 2: Turkey's Defense Expenditure, Defense Expenditure/GDP, External Debt and Unemployment Rates Between 1988-2020

Years	Defense Expenditure* ($ Billion)	Def..Exp. /GDP** (%)	Ext. Debt** (%)	Unemployment ** (%)
1988	5.708	6,282676411	46,404	8,04
1989	6.605	6,164658447	39,667	8,26
1990	7.981	5,296795774	33,357	8,02
1991	8.204	5,468312582	34,518	8,21
1992	8.630	5,446203750	36,289	8,51
1993	9.541	5,295554199	38,666	8,96
1994	9.328	7,137500956	51,991	8,58
1995	9.583	5,654154325	44,372	7,64
1996	10.725	5,909872380	45,156	6,63
1997	11.178	5,888271394	45,348	6,84
1998	11.712	4,243985694	35,517	6,89
1999	12.932	5,043957158	40,225	7,69
2000	12.516	4,562837446	43,211	6,50
2001	11.473	4,774389001	57,405	8,38
2002	12.208	5,081394720	54,944	10,36
2003	11.353	3,608766827	46,621	10,54
2004	10.550	2,580313796	39,583	10,84
2005	10.168	2,008235980	34,665	10,64
2006	10.644	1,910690821	38,295	8,72
2007	10.263	1,506338422	38,520	8,87
2008	10.411	1,351289962	38,090	9,71
2009	11.140	1,715722891	43,456	12,55
2010	10.943	1,408390885	39,051	10,66
2011	11.036	1,315711040	36,748	8,80
2012	11.307	1,284075062	38,769	8,15
2013	11.612	1,212362928	41,125	8,73
2014	11.697	1,245774463	43,628	9,88
2015	12.036	1,392549467	46,798	10,24
2016	14.112	1,622660211	47,579	10,84
2017	15.147	1,763352034	53,846	10,82
2018	19.225	2,469866980	58,186	10,89
2019	20.603	2,705847588	58,880	13,67
2020	19.567	3,012903424	41,400	13,92

**Source: SIPRI*

***Source: *World Bank*

development, getting educational training, improving their technical skills, or investing it in new technology (Benoit 1973). For this reason, any increase in this demand created by the defense sector will lead to growth in the long term.

Resource allocation may be another factor causing defense expenditure to affect growth. When governments increase their expenditures on their defense it means there will be fewer funds available for other investments and can render economic growth of the country. One way to express it is as the opportunity cost of higher defense expenditure. Allocating resources has a direct impact on growth.

However, when new resources are created this is referred to as an indirect way for defense expenditures to influence economic growth. Within economies that are experiencing constraints in their aggregated supply, defense expenditure is regarded as inflationary. This situation leads to higher profitability and attracts investments, which will boost the growth in economy. However, it must also be considered that as the expectation of continually increasing inflation changes consumption and spending patterns. Higher inflation expectation is said to increase consumption, hence decreasing the amount of savings. With lower savings, investments will drop and the growth potential of the economy will be much lower (Ali and Ather 2015).

Macroeconomic variables are related to each other either in the same or the opposite direction. In other words, macro variables are either in relation or in contradiction with each other. When an economy starts to grow, it means investing more, producing more, and increasing capacity utilization. The natural result of these means more employment. In other words, unemployment should decrease in an economy where growth accelerates (Eğilmez 2013).

On the other hand, the fact that underdeveloped and developing countries cannot obtain the funds they need to ensure their development from domestic sources causes foreign borrowing. External debt, which is an additional resource for the country's economy, is expected to increase economic growth by using it to finance investments. The high levels of external debt taken over time and the increase in the country's external debt burden brought along high debt payments. The use of borrowings in debt and interest payments has also led to debates pointing on the negatives of having an external debt on the growth of the economy (Biçer 2020).

LITERATURE REVIEW

There is a vast amount of literature investigating how defense expenditure is used, its relationship with different macroeconomic variables, as mentioned above, or whether it contributes to the economic growth of a country. These studies can be classified in many ways such as according to the views it supported, the methodology used or the data used, and so on. Researchers are seen to look for common features, similarities among countries to obtain an understanding regarding the results obtained. Looking at a few of these studies will contribute to this paper and be able to summarize the discussions on the topic. These involve discussions on whether governments or countries can boost economic growth by increasing expenditure on defense.

There are few studies within past literature, which show that macroeconomic variables and defense spending have an inverse relationship (Pieroni 2009; Duyar and Kocoglu 2014; Korkmaz 2015; Cevik and Bektas 2019). It is interesting to see that although they involve different geographical areas and different countries, their results supported one another. Study by Pieroni (2009) was seen to focus on countries with high military spending levels. The results of it pointed out to a negative relation between spendings on the military and the country's growth. Duyar and Kocoglu (2014) conducted a study on 55 Sub-Saharan African countries and found that military expenditures did not make a positive contribution to the economy, that African countries directed their already scarce resources to military expenditures, and they did not give priority to policies and strategies which focus on the country's development both economically and socially. It was determined that it causes them to fall behind in economic and social areas compared to other countries of the world. Korkmaz (2015) conducted a study on 10 Mediterranean countries between 2005 and 2012, after the Arab Spring. The study investigated the unemployment and growth in the economy and how these were affected by the expenditures to the military using a panel data analysis. Results showed that military expenditures negatively affected economic growth and increased unemployment.

However, just as this study, Cevik and Bektas (2019) have investigated relationship of expenditures relating to defense and the growth in the Turkish economy both in the short and the long-term for the years between 1967 and 2017. It was shown that the causality from these expenditures on defense and the growth experienced in the economy was unidirectional in the long run, and unexpected increases in defense expenditures had adverse effects on GDP.

One of the recent works was by Azam (2020) where the focus area was interesting and was on the countries other than OECD member countries. Altogether 35 countries/markets were investigated using data covering the period between 1988 and 2019. Findings showed that there exists an inverse relationship between the two and that military expenditure should not be encouraged if economic growth needs to be established.

Another comprehensive study was conducted by Torun et al. (2021) where 26 NATO countries were examined using data from 1991 to 2016. Looking at the long-term results, it indicated that while the effect of defense expenditures was negative, both employment rates and fixed capital investment values had a positive effect on the countries' GDP.

Rahman and Siddiqui (2019) have seen to approach the issue from a different perspective by saying that a direct effect of military spending on GDP does not exist. But rather than, it was mentioned to have an indirect effect through lowering risk and providing stability.

However, as previously mentioned, there is controversy over the results. There are also studies pointing out that by increasing defense expenditure, the country's GDP will rise, unemployment rates will start to decline and there will be economic growth experienced in that country. Gentilucci (2002) has expressed that in recent years China's role has become more important not only as an economic but also as a military power which has led China to move towards becoming one of the world's military powers. It has been explained that the increase in Chinese military expenditures was entirely by the increase in China's GDP. On the other hand, work conducted by Dunne and Tian (2013) stated that decreasing expenditures for the military may not always be costly and can have a contribution to the improvement of economic performance, particularly in countries with developing economies. It was expressed in the study that military expenditures have a price and if a country wants to be strong militarily, it should invest in its own economy, and the best way to ensure national security is economic growth.

One of the supporting studies was of Sokhatskyi et al. (2020). Their results indicated that the variables analyzed had a positive effect on the growth of the economy. Also, expenditures for military were observed to have a higher correlation with GDP growth values when compared to public expenditures. Nugroho and Purwanti (2021) tested the interaction of population together with foreign direct investment, political stability, and the law with military expenditure to observe their effect on the economic growth of the country. The study conducted on India by Abdel – Khalek et al. (2020) and on Nigeria by Temitope and Olayinka (2021) have also provided supporting arguments.

DATA AND METHODOLOGY

The purpose of this study is to determine the relationship and interactions among expenditures on defense and gross domestic product, foreign debt, and unemployment in Turkey between the years 1998 and 2020. Defense expenditures, gross domestic product, foreign debt ratio, and unemployment rate values for the specified dates are obtained from SIPRI and the World Bank. Although the relations of all these variables with defense expenditures for Turkey have been discussed separately in different periods in past literature, it is considered that examining the interaction between the defense expenditures and the years of 1998 and 2020 will have great contributions to the existing literature on the topic.

To be able to test for the existence of a relationship among the variables firstly, descriptive statistics will be analyzed. This will then be followed by a correlation analysis between Turkey's defense expenditures and gross domestic product, foreign debt ratio, and unemployment rate values.

In the third stage of the analysis, it is necessary to determine whether the series contains a unit root, that is, whether they are stationary or not. To begin with, first-generation unit root tests (ADF, PP), that do not take into account structural breaks, were used to determine whether the series were stationary or not.

Stationarity within time series means both variance and mean of the series stays constant. The covariance of the series becomes dependent on the delay from one period to another, and there is no time-dependency (Atik et al. 2015). If the time series is not stationary, it will contain a stochastic or deterministic trend. The mean, variance, and covariance of time series that are stationary are independent of time and do not change over time. Such a time series will show constant width oscillations around its mean. This feature of the series is called mean reversion. Stationary series are also used in the literature with different names such as weak stationary and covariance stationery. Assuming that Yt is a series to explain the stationarity;

$$E(Y_t) = \mu$$

$$Var(Y_t) = \gamma_0$$

$$Cov(Y_t, Y_{t+k}) = \gamma_k$$

When we bring the starting point from t point to t+k, if the Y_t series is stationary, the mean, variance and covariances of the Y_t, and Y_{t+k} series must be the same. But if k is 0; we can get

$$Cov(Y_t, Y_{t+0}) = Var(Y_t) = \sigma^2$$

If the time series is not stationary, it's mean, variance, or both will change over time. If the series is not stationary, the behavior of the series cannot be generalized for other periods and cannot be used to predict the future (Yalta 2011).

Therefore, to test the stationarity of the series, the Augmented Dickey-Fuller (ADF) unit root test, one of the first generation tests, was applied. This test is used for the assumption that the distribution of the error term is random and homogeneous and has different variances and serial correlations.

$$\Delta Y_t = \beta_1 + \beta_2 . t + \delta . Y_{t-1} + \alpha_i . \sum_{i=1}^{m} \Delta Y_{t-i} + \varepsilon_t \qquad (1)$$

ΔYt = The first difference of the series whose stationarity is tested.

t= Trend variable,

ΔYt-i = Lag difference

εt= It is an error term with a mean of 0, no sequential dependence, and an unchanged variance.

In the ADF unit root test,

H0= α1=0

H1= α1<0, rejecting H0 means that the series is stationary and does not contain a unit root.

Following the unit root test, the causal relationship between variables must be established. Due to the different levels of stationarity of the series, it was deemed more appropriate to apply the Toda-Yamamoto causality test (1995) instead of the Granger causality test (1969). In the Toda - Yamamoto test, analysis can be performed without the need to make the series stationary. Thus, successful results can be obtained without the loss of information in the series. It is based on the Toda - Yamamoto Vector Autoregressive (VAR) model. In the VAR model, first of all, the optimal lag length (m) and the maximum stationarity level (dmax) of the series used are determined. Subsequently, a VAR model of size (m+$dmax$) is estimated (Toda and Yamamoto, 1995). The mathematical equation of the relevant VAR model is shown below.

$$Y_t = a_0 + \sum_{i=1}^{p+d_{max}} + \sum_{i=t}^{p+d_{max}} a_{2i} + u_t \qquad (2)$$

$$X_t = \beta_0 + \sum_{i=1}^{p+d_{max}} \beta_{1i} + \sum_{i=t}^{p+d_{max}} \beta_{2i} Y_{t-1} + v_t \qquad (3)$$

The hypotheses of the related equation;

H_0: The relationship from Y to X is not causal

H_1: The relationship from Y to X is causal

The model needs to be able to satisfy the stability condition of the VAR model and this need to be determined. Root AR diagram method states that, when the inverse roots of the AR characteristic polynomial falls below 1, that is, if they are inside the unit circle, the model can be said to be stable (Dan et al. 2014). According to this, it is seen in Figure-1 that the inverse roots of the autoregressive characteristic polynomial of the estimated VAR model are distributed within the unit circle and satisfy the stability conditions.

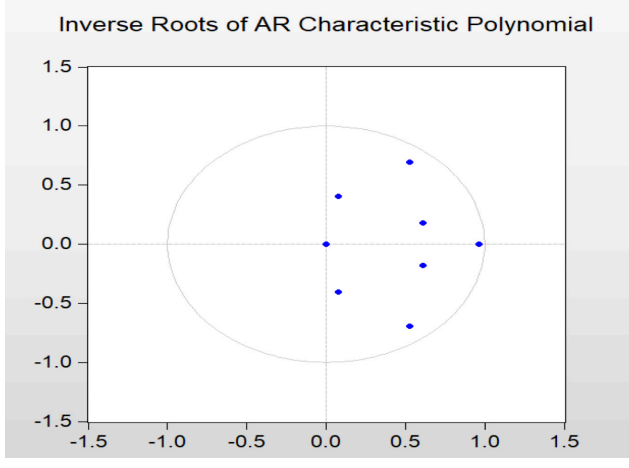

Figure 1: Distribution of Unit Roots of the AR Function in a Circle

RESULTS

In the first stage of the analysis, descriptive statistics data are given in Table 3. According to the values obtained, the standard deviation of Turkey's external debt and unemployment rates in the surveyed periods is higher than that of defense expenditures and gross domestic product.

Correlation coefficients between Turkey's defense expenditures and gross domestic product, foreign debt ratio and unemployment rate values are shown below in Table 4. By looking at the values from the table it can be said there exists a moderate correlation that is positive among defense expenditures and GDP, foreign debt ratio and unemployment rate. Among the analyzed independent variables (gross domestic product, external debt ratio and unemployment rate), there exists a very low correlation, which is also positive, between the GDP and foreign debt, and a moderate positive correlation among GDP and unemployment rate.

In the next stage of the analysis, ADF test was applied and the results obtained are given in Table 5. According to the table, it was concluded that some of the series

Table 3: Descriptive Statistics

Variable	Observation	Medium	Medyan	Maxsimum	Minumum	Standart Deviation
DEFEXP	33	9.316296	9.318298	9.933192	8.649624	0.267900
GDP	33	12.83380	12.92114	13.77239	11.41700	0.760611
EXTDEBT	33	43.40424	41.40000	58.88000	33.35700	7.133394
UNEMPLOY.	33	9.332727	8.800000	13.92000	6.500000	1.857753

Table 4: Correlation Analysis Results

Variables	lnDEFEXP	lnGDP	EXDEBT	UNEMPL
lnDEFEXP	1.000000			
lnGDP	0.655828	1.000000		
EXDEBT	0.496740	0.093349	1.000000	
UNEMPLOY	0.573715	0.568114	0.324443	1.000000

Table 5: ADF Test Results

		Constant		Constant+Trend	
	Variables	**t Stat**	**P Value**	**t Stat**	**P Value**
1.	LnDefExp	-1.4719	0.534	-1.8657	0.648
2	ΔlnDefExp	-4.1405	0.003***	-4.0679	0.016**
3.	lnGDP	-1.9713	0.297	-0.7517	0.959
4	ΔlnGDP	-5.4175	0.001***	-5.8635	0.001***
5.	ExtDebt	-3.3048	0.023**	-3.3747	0.073*
6.	Unemployment	-0.9693	0.752	-3.0889	0.126
7.	ΔUnemployment	-4.8011	0.001***	-4.8493	0.002***

*Note: The stationarity of the series was determined using the "Schwarz Information Criteria" (AIC) over a maximum lag length of 8. (stationarity at the 10%, 5%, and 1% significance levels are denoted by *, **, and ***, respectively).*

were stationary at the 95% confidence level ($p<0.05$) and the other series were stationary when the first difference was taken as I(1) ($p<0.05$).

The existence of a unit root indicates that the related variable is not stationary. From Table 5 it is seen that the stationarity levels of the variables vary. In addition, in the tests performed by taking the first difference of the series, there is information loss in the level values of the variables. In the analysis developed by Toda and Yamamoto (1995), this loss of information is prevented and the variables are included in the analysis with their level values. For this reason, Toda-Yamamoto causality analysis was preferred in the study. Toda-Yamamoto (1995) analysis is based on the VAR (Vector Autoregression) model which allows the model with level values to be estimated regardless of whether the data in question has a unit root or not. As a result, in the Toda-Yamamoto causality analysis, the unit root of the series and the existence of a cointegration relationship do not affect the analysis.

To apply the Toda-Yamamoto test, no autocorrelation must exist between the series. Therefore, the results of the Autocorrelation test are given below in Table 6.

The H_0 Hypothesis, which was established as no autocorrelation, could not be rejected and it was accepted that there was no autocorrelation.

Table 6: Autocorrelation Test

Lag	LRE* stat	df	Prob.	Rao F-stat	df	Prob.
1	12.57405	16	0.7036	0.769983	(16, 46.5)	0.7092
2	13.87027	16	0.6084	0.860146	(16, 46.5)	0.6151
3	21.03438	16	0.1772	1.399893	(16, 46.5)	0.1837

Table 7: Toda-Yamamoto Test Results

Model	Direction	x^2	Lag	P Value	Explanation
1	DEFEXP-GDP	7.424345	1	0.006***	**Causality Exist**
	GDP-DEFEXP	0.448673	1	0.5030	No Causality Exist
2	DEFEXP-EXTDEBT	4.219434	1	0.040**	**Causality Exist**
	EXTDEBT-DEFEXP	1.643713	1	0.199	No Causality Exist
3	DEFEXP-UNEMPL	0.556210	1	0.455	No Causality Exist
	UNENPL-DEFEXP	1.354059	1	0.244	No Causality Exist

Note: *, **, and *** indicates that the "H0 No Causality" hypothesis is rejected at the 10%, 5%, and 1% significance level, respectively.

The dependent variable, which was stabilized in the last stage of the analysis, was Defense Expenditures and the independent variables; whether there exists a causal relationship among GDP, External Debt Ratio and Unemployment Rate series one by one, and if there is causality, in which direction it will be examined with the Toda-Yamato causality test.

Causality from expenditures on defense to gross domestic product was observed from the results of the causality test, in other words, the change in defense expenditures affects gross domestic product. Similarly, causality has been determined from defense expenditures to external debt; therefore, it can be stated that any change experienced in the expenditures on defense will, in turn, affect the external debt of the country. On the other hand, the causality relationship from gross domestic product to defense expenditures, from foreign debt to defense expenditures could not be determined. On the other hand, no bidirectional causality relationship could be determined between defense expenditures and unemployment.

In this study, in addition to the Toda and Yamamoto (1995) causality test, the time-varying recursive evolving window causality test developed by Shi, Phillips and Hurn (2018) was also applied to observe how the results differed when structural breaks and shocks were incorporated into the method to investigate the causal relationships. Using this test also helps to determine the starting and ending dates of the causality relationship and can allow for a clearer analysis.

Figure 2 shows the Mwald test statistics for the time varying recursive evolving window causality test. According to the results, it was observed that t Granger causality existed between the series in the years when the Mwald test statistics were found to exceed the critical values. Thus, this study provided the opportunity to compare the test results of Toda Yamamoto and the Time Varying Recursive Evolving Window.

According to Figure 2a, at the level of 90% and 95%, it was determined that there is causality from defense expenditures to GDP in 1996, between 2007 and 2012, and causality from GDP to defense expenditures in 2003 and between 2010-2015.

According to Figure 2b, at the level of 90% and 95%, it was determined that there is causality from defense expenditures to foreign debt in 1998, between 2007-2012 and causality from foreign debt to defense expenditures in 2008 and between 2016-2019.

According to Figure 2c, at the level of 90% and 95%; while no causality relationship was found from defense expenditures to unemployment in the years

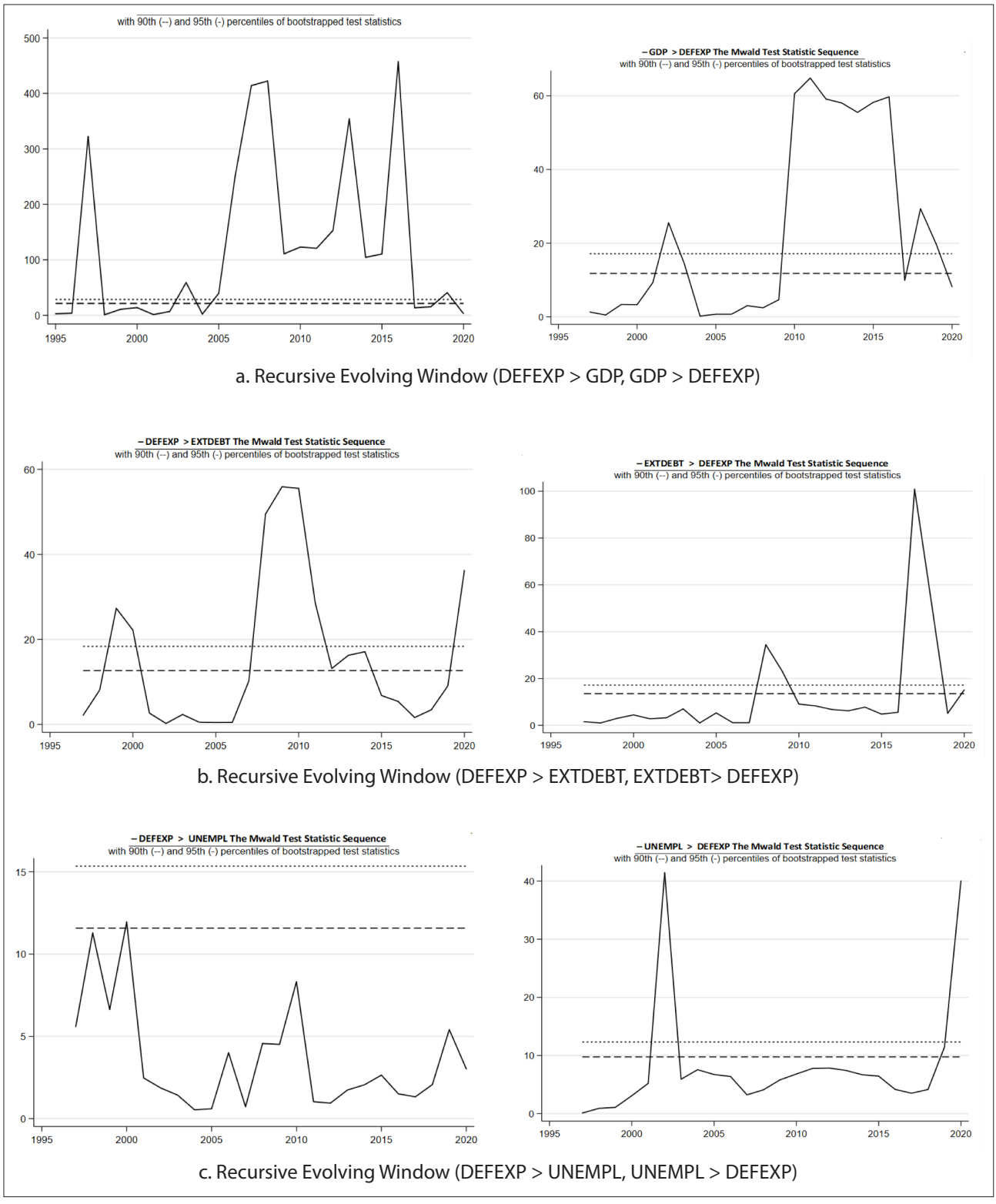

Figure 2: Time-Varying Granger Causality Test Results (Recursive Evolving Window)

examined, it was determined that there was causality from unemployment to defense expenditures in 2003 and between 2018-2020.

As stated before, the Time Varying Recursive Evolving Window does not focus on a single causal relationship in the entire sample; it can precisely show any causal relationship and the start and end dates of this relationship. Therefore, different findings were obtained in both Toda Yamamoto and Recursive Evolving Window test results. The differences of findings of the two causality tests are shown in Table 8.

Table 8: Comparison of the Toda and Yamamoto (1995) and the Shi, Phillips and Hurn (2018) Causality Tests

Explanation	Toda and Yamamoto (1995)	Shi, Phillips and Hurn (2018)
DEFEXP-GDP	Causality Exists	Causality Exist: 1996, between 2007-2012
GDP-DEFEXP	No Causality Exists	Causality Exist: 2003, between 2010-2015
DEFEXP-EXTDEBT	Causality Exists	Causality Exist: 1996, between 2007-2012
EXTDEBT-DEFEXP	No Causality Exists	Causality Exist: 2008, between 2016-2019
DEFEXP-UNEMPL	No Causality Exists	No Causality Exists
UNENPL-DEFEXP	No Causality Exists	Causality Exist: 2003, between 2018-2020

CONCLUSION

Determining the amount of resources allocated by nations for defense is a very important issue for countries from all around the world. The determinants of this amount allocated, but not limited to, are; geo-strategic positions of countries, conditions of peace and stability in the region, political and military preferences, and economic resources. Within the framework of these determinants, it is necessary to make an optimization by the country managers for the amount of resources allocated to defense. But the resources allocated for defense have alternative uses within the country under peace conditions. Therefore, the use of these resources is country specific. However, it needs to be known that these resources should be used effectively and efficiently, as each unit of the resource is very valuable.

Today, it is considered that countries finance their defense expenditures from their budgets and the special funds they create, and its size can reach up to 20%. It is considered that the use of such a large amount of resources and the determination of the relations between the country's other macroeconomic variables will contribute to the literature, especially for Turkey. Turkey is located in a unique geography and because of it has been in the middle of many conflicts. Due to its geopolitical position, has been exposed to constant terrorism, and in recent times have experienced conflicts with Greece, Syria, the USA, and Russia.

In the study, using Turkey's defense expenditures (dependent variable) between 1998 and 2020, the relationship between the variables gross domestic product, external debt and unemployment (independent variables) were investigated. First step of study involved using the Toda-Yamamoto Causality Test. According to the findings, it has been observed that there exists causality from expenditures on defense to gross domestic product, that is, the change in defense expenditures affects gross domestic product. Similarly, causality has been determined from defense expenditures to external debt. Therefore, it is possible to state that changes in expenditures on defense will have an impact on foreign debt.

Second step of study the causality test of Shi, Phillips and Hurn (2018) was applied to the data. This test allowed for structural breaks and included the shocks while showing the precise dates when causality started and ended. It was interesting to see that the findings obtained from this test varied from those obtained from the Toda-Yamamoto Causality Test. According to the Shi, Phillips, and Hurn (2018) causality test findings, there was no causality from the expenditures for defense to unemployment but for all others (from expenditures on defense to GDP, from GDP to expenditures on defense, from expenditures on defense to external debt, from external debt to expenditures on defense, and from unemployment to expenditures on defense) a causality was observed, but they varied in terms of the years.

Although defense expenditures vary from county to country, majority of the studies show a consensus on the issue that an increase in the expenditures on defense will cause an increase in the production taking place within the defense industry, the export of this production will result in a resource inflow to the country and the gross national product will increase. This study has supported these findings. However, the causality relationship from gross domestic product to defense expenditures, from foreign debt to defense expenditures could not

be determined. No bidirectional causality relationship could be determined between defense expenditures and unemployment. Some of the findings are not consistent with the studies in the literature. For example, although it has been determined in the literature that there exists an inverse relationship among defense expenditures and unemployment, in this study, no reciprocal causality was found between defense expenditures and unemployment. The reason for this can be considered as the difference between the sample in which the study was conducted and the periods examined.

At this point, one of the most important issues is to determine the optimal size of defense expenditures, which is public expenditure, within the national income. In accordance with NATO's Final Decision of the Wales Summit in 2010, this value has been determined as 2% of national income for countries (NATO, 2020). In the study conducted by Bayrak (2019), this value was determined as 2.5% for Turkey. This value is very important; because it will be possible to prevent unnecessary defense expenditures by determining the optimal value that encourages economic growth. Thus, it will be possible to ensure resource efficiency by transferring defense expenditures with high alternative costs to high value-added areas of the manufacturing industry or by transferring them to areas such as health and education that increase the level of intellectual capital and social welfare.

Major arms dealer countries around the world such as US, Russia, England, France, and Germany see the weapons and defense tools and equipment they produce as investments, in addition to using their defense expenditures in their own countries and in the regions where they have interests in the world, and in this sense, the weapons they produce are underdeveloped.

Thus, these findings are important to observe how defense expenditures affect of be affected by the country's macroeconomic variables, which gives us an idea about its economic growth. As previously mentioned, each country have different dynamics and profiles which cause them to employ different strategies when employing their resources for defense. However, there are some general statements found in literature, which have a global perspective. The results of this study were important to point out that the Turkish market also supported them. It still can be considered as early to make big and bold statements about the Turkish market from these results. There should be further research conducted using a different and bigger sample size, and to try and understand the reasons of these causalities found.

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Sanctions and the Russian Federation's Economy: A Systematic Literature Review and Analysis of Global Energy Sector

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ABSTRACT

The current paper examines how sanctions implemented by a number of countries, particularly the United States (US), the European Union (EU), and the United Kingdom (UK), have affected the Russian Federation's economic and global energy sectors. The Russian Federation's special military operation against Ukraine has been effective in sharply raising the price of food, natural gas, and oil as well as continuously raising inflation rates throughout the world. The study was inspired by this circumstance. Political risks are anticipated to lead to increased global economic instability, unpredictable stock price increases, supply chain disruptions, high costs, and a decline in investment. The current effects on the global economy would unavoidably worsen if the Russian Federation responds by prohibiting the export of vital global commodities such as oil, natural gas, wheat, and minerals (including neon, titanium, palladium, and ammonium nitrate). In this context, the study will attempt to highlight the importance of oil, natural gas, and other significant minerals for both Russian Federation and the global economy, as well as the effects of sanctions within the global energy sector. To this aim, the paper, a comprehensive literature review was applied using the available economic and energy data. The findings reveal how the sanctions have affected the Russian Federation economy and the global energy sector.

Keywords: Sanctions, Economic Impact, Global Energy Sector, Oil, Natural Gas.

JEL Classification Codes: O13, P28, F51

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INTRODUCTION

In the past, military conflicts have had a considerable negative influence on the regional and global economies, causing everything from financial ruin to the loss of resources, livelihoods, and economic, commercial, and labor capability (Khudaykulova et al. 2022). Additionally, the effects of military operations are felt by all parties involved, as well as by the countries with which they trade and the nations that are neighboring (Plakandaras et al. 2019). Numerous authors have investigated how military actions affect commodity pricing and long-term performance, and they have highlighted how crucial they are to the creation of financial and macroeconomic fluctuations. Numerous authors have explored how military operations affect commodity pricing and long-term performance, emphasizing how important they are in creating financial and macroeconomic cycles (Yui, 2023; Orhan 2022; Khudaykulova et al. 2022; Ozili 2022; Mbah and Wasum, 2022). Most recently, these economic effects were seen after Russia's military operation against Ukraine in February 2022. The USA, Europe and many other countries have gradually started to impose economic sanctions on the Russian Federation.

Fundamentally, the beginning of the Russian Federation's a special military operation on Ukraine is a blow not just to the European economy, but also to the global economy (Trofimovich, 2022). The conflict between the Russian Federation and Ukraine, which continue to be the major producers of agricultural raw materials, was quickly mirrored by price patterns on the global market (cereals, oilseeds, and other agricultural products). Furthermore, sanctions imposed on Russian Federation by a number of countries, comprising the US, the EU, and the UK, have had a considerable influence on the Russian Federation economy and global energy sector (Shapran and Britchenko, 2022).

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The importance of oil and gas resources in Russian Federation's energy policy is based on various factors. Most notably, the Russian Federation's oil and natural gas resources link the country to the worldwide community, as well as the regional (EU) and global markets (Ishakova et al. 2016). During the sanctions regime, Russian Federation's international energy connectivity has grown increasingly essential, demonstrating that sanctions not only harm key sectors in the country, but also influence the country's worldwide status (Sassi, 2022). As key valuable raw commodities, oil and gas are not only the foundation of Russian Federation's economy, but also strategic and political tools that interact with the country's domestic and foreign policies (Rezaeinejad, 2022).

In addition, the Russian Federation's special military operation against Ukraine, which took place in the heart of Europe, had a huge impact on the economy and the environment, particularly at a time when numerous countries' economic, social, political, and environmental issues were the subject of more in-depth discussion (Isik et al. 2022). Due to the importance of energy resource distribution for both economic and environmental sustainability, issues including global warming, climate change, and environmental pollution have gained attention since the Paris Agreement was signed in 2018 (Isik et al. 2021). It appears inevitable that this military operation will interfere with the sustainability objectives (such as the carbon emission target) of many nations, including the Russian Federation. Additionally, one of the main goals of the sanctions put on the Russian Federation is to weaken its financial and economic system (Yui, 2023). Thus, it is anticipated that the sanctions will have an impact on the country's environmental and energy targets.

Apart from correctly analyzing how the sanctions affect Russian Federation's energy industry, economic-environment interpretation and analysis of the sanctions' economic repercussions for Russian Federation are crucial. Because Russian Federation is the EU's top energy importer, and energy export profits make up a significant amount of the Russian Federation's revenue. The fact that Russian Federation's economic situation, which has become the world's most sanctioned country as a result of sanctions imposed when the Ukrainian- Russian Federation conflict late in February 2022, and its effects on the energy industry have yet to be investigated, necessitates this paper. In other words, the military operation Russia has taken against Ukraine has had an impact on the energy market, which has damaged both the Russian and global energy markets. This study's uniqueness lies in the way it reviews these impacts collectively.

The contribution of the paper to previous literature is as following. Firstly, to the best of our knowledge, this is the first attempt to examine the oil and gas sector in the aftermath of Russian Federation sanctions imposed in response to the crisis between Ukraine and Russia. Second, the current study examines the Russian Federation's sanctions-related position in the global energy sector, using more recent and up-to-date data than earlier studies in the literature. Finally, it is expected that the findings of the study will be useful to policymakers around the world, demonstrating the effects of Russian Federation sanctions.

This paper is organized as follows. Following the background section, some information on the economic position and energy resources is presented. The sanctions are then summarized, along with the reactions that occur as a result of the implementations. The current study finishes with a description of the situation of Russian Federation's energy industry following the sanctions, findings concentrating on policy aspects countering the sanctions, and lessons learned.

BACKGROUND-LITERATURE REVIEW

While countries throughout the world strive to recover from the economic repercussions of the COVID-19 epidemic, Russian Federation's special military operation in Ukraine has exacerbated the problem, as global energy prices have risen, and supply chain congestion, particularly in agriculture, has worsened the economic situation due to both Russian Federation and Ukraine are the world's largest wheat suppliers (Mbah and Wasum, 2022).

Looking at the literature, some studies focus on the sanctions imposed on Russian Federation (Belomoin, 2022; Zenchenko et al. 2022; Miah and Sheppard, 2022; Deuber, 2022), while others focus on the global implications of the Russian Federation-Ukrainian conflict (Ozili, 2022; Grzegorczyk et al. 2022; Huang and Lu, 2022). For instance, Oxenstierna and Olsson (2015) qualitatively evaluate the effects of the economic sanctions imposed on the Russian Federation by the EU and the USA in 2014 and other activities in eastern Ukraine. Shapran and Britchenko (2022) examine the Russian Federation's Central Bank's strategy in reaction to sanctions imposed by the US, the EU, the UK, Switzerland, Japan, South Korea, and a number of other nations.

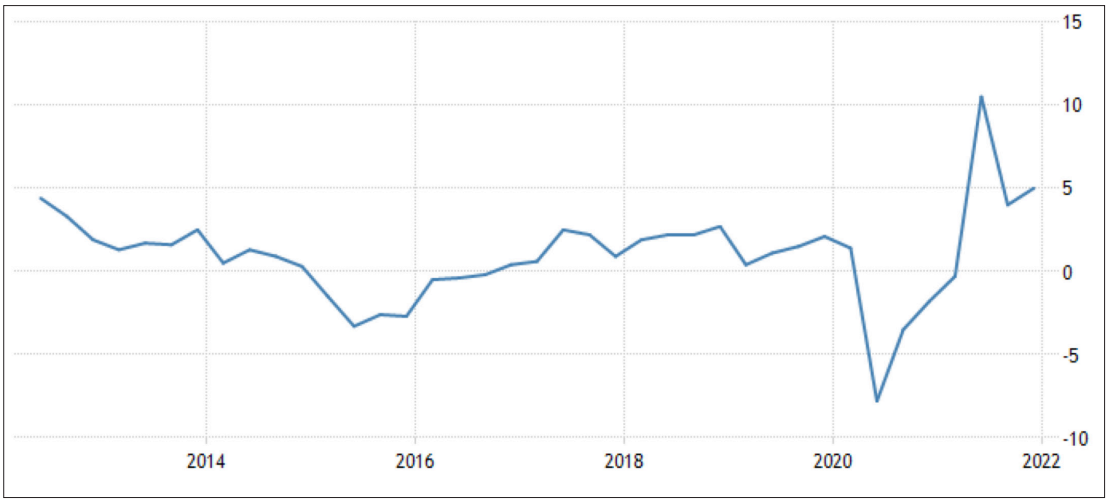

Figure 1: Russian Federation GDP Annual Growth Rate (%)
Source: *Trading Economics, (2022)*

In many of the studies on the sanctions imposed on Russian Federation by many countries, Berner et al. (2022), Huang and Lu (2022), and Deng et al. (2022), the effects of sanctions on world financial markets are examined. Ferrara et al. (2022) use a high-frequency technique to link the financial stress index of sanctions to euro area macroeconomic concerns. Brunnermeier et al. (2022) explore the impact of sanctions on Russian Federation's Central Bank on the international monetary system's design. According to Spencer (2023), the EU's severe sanctions towards the Russian Federation are molded by ongoing political processes. The political response to the Russian military operations, the legal restrictions on the application of sanctions, the conflicting interests of the member states, and a recent desire to curtail EU Restraint Norms all play a role in these processes. Recently, Maltsev (2023) examines the first significant consequences of the Western sanctions for the global and Russian economy. The study indicates that the West's sanctions strategy has had a considerable, varied, and frequently detrimental impact on the global economic system. According to the argument, the Russian Federation's internal economy and the protection and reproduction of its human capital will now be responsible for long-term economic growth under the current conditions of relative external isolation.

The background information about the Russian Federation's economic state and its energy resources is provided in this study's study after it discloses what the literature says about the sanctions imposed on it. To our knowledge, no review research has been done on the consequences of the economic and energy impacts on the Russian Federation while economic and energy studies have been done separately on the worldwide effects of the Russian-Ukrainian military action.

Economic Situation of the Russian Federation – Oil and Natural Gas Data

The biggest impact of the economic sanctions on Russian Federation is related to its international trade because more than 80% of Russian Federation's daily foreign exchange transactions and half of its trade are in US dollars (Liadze et al. 2022). The US, the EU, the UK, Australia, Canada and Japan have targeted banks and wealthy individuals (Ozili, 2022), while Germany has put an end to a major Russian Federation gas pipeline project (Kirkham, 2022). Furthermore, the Russian Federation central bank's foreign reserves have been blocked, and its banks' access to the international payment system SWIFT has been restricted; only energy transactions and gas bill payments are still permitted (Astrov et al. 2022). The EU also restricts access to European capital markets, preventing funds held by EU banks from being accessed (Komarnicka and Komarnicki, 2022).

Russian Federation will not be able to benefit from the growth benefits in foreign commerce caused by the substantial depreciation of the ruble in the near future due to its economic isolation (J curve effect[1]) (Keerati, (2022). Russian Federation, on the other hand, does not face a GDP collapse because it possesses energy resources, consolidated economic institutions that have long been oriented toward self-sufficiency in some areas, and a functioning economic and financial bureaucracy. Furthermore, certain export activities, particularly by land and water, persist. However, although the Russian Federation economy's potential growth was projected at 1.5% before the Ukraine special military operation,

[1] The J-curve effect is frequently used to explain why a country's trade balance initially deteriorates after currency depreciation, then swiftly rebounds and eventually surpasses its former performance.

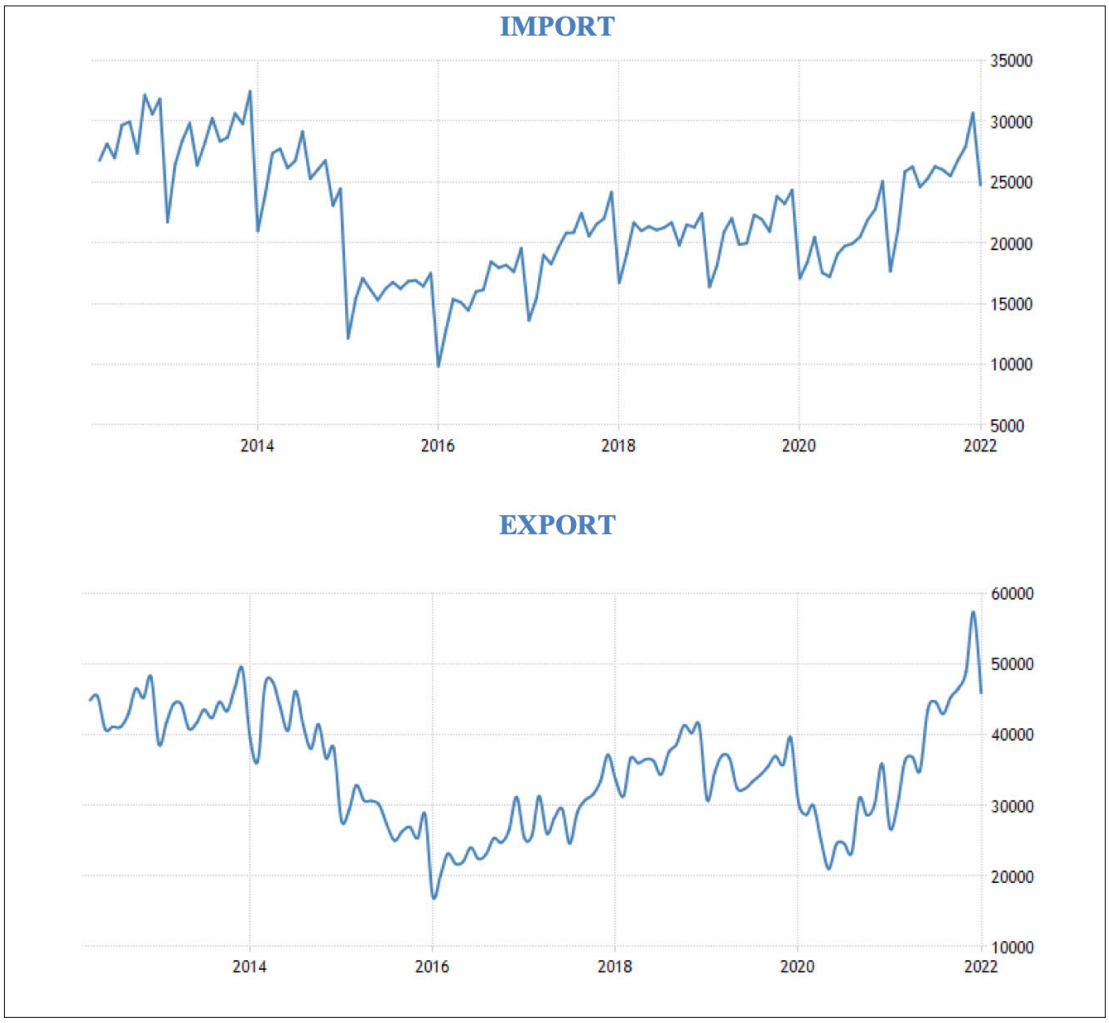

Figure 2: Russian Federation's Import and Export (%)
Source: *Central Bank of Russian Federation, (2022).*

it is now expected to dip below 1% (Deuber, 2022). Furthermore, in the Russian Federation economy based on raw materials, fossil fuels and raw material production account for 28-30% of GDP, two-thirds of industrial production, up to 40% of the federal budget, 25% of the consolidated budget, and 75% of export revenues. If the "traditional" pattern of economic growth persists, Russian Federation's ability to supply fuel and basic materials to its trading partners and the home market in the next decades will be critical (Bashmakov, 2022). Thus, Russian Federation's economic development is depicted in Figure 1 below.

As seen in Figure 1, the serious decline in GDP in 2020 increased in 2021. The Russian Federation's GDP accounts for 1.31% of the global economy, according to World Bank. The Russian Federation's GDP is anticipated to rise by 4.7% in 2021, after declining by 2.7% in 2020. It is extremely difficult to forecast how the Russian Federation economy would fare following the conflict with Ukraine. The sanctions imposed on Russian Federation, on the other hand, will plunge the Russian Federation economy into a devastating recession. The Russian Federation's GDP is expected to plummet 9.6% in 2022, according to Bloomberg, with the greatest quarterly GDP decline hitting –15.7% of annual growth rate. The Russian Federation's government bodies, on the other hand, predict a 6-8% fall (Pestova et al. 2022).

Furthermore, after the sanctions it is not possible to clearly assess how severely Russian Federation imports will collapse in the coming months or how long and how long exports may continue, making it difficult to explain how high the positive external contribution to Russian Federation's growth is. In 2022, imports are likely to fall by 40-50% and exports by at least 10-15% (Deuber, 2022). The import and export of Russian Federation is as in Figure 2 below.

As seen in Figure 2, Imports fell in the first quarter of 2022. Prior to the Ukraine operation and Western sanctions, Russian Federation's imports increased by 40.1% in January 2022, reaching USD 24.75 billion, the

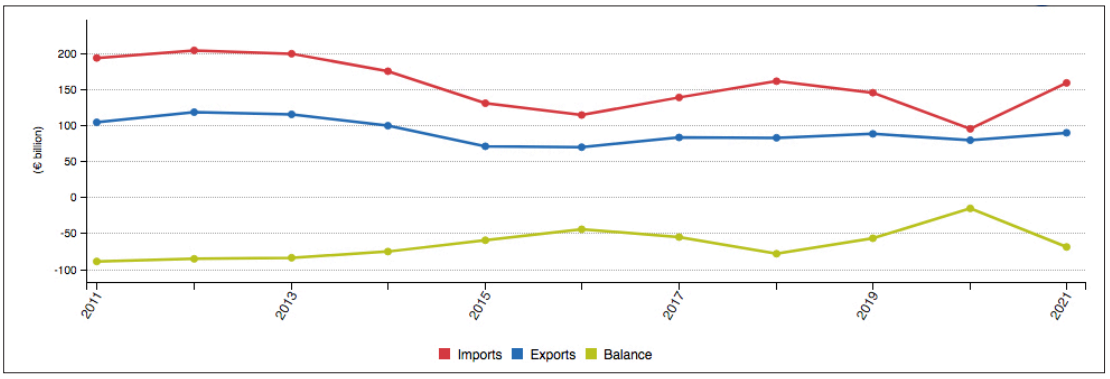

Figure 3: The Import and Export between the EU and Russian Federation (2011-2021)
Source: *Eurostat, (2022)*

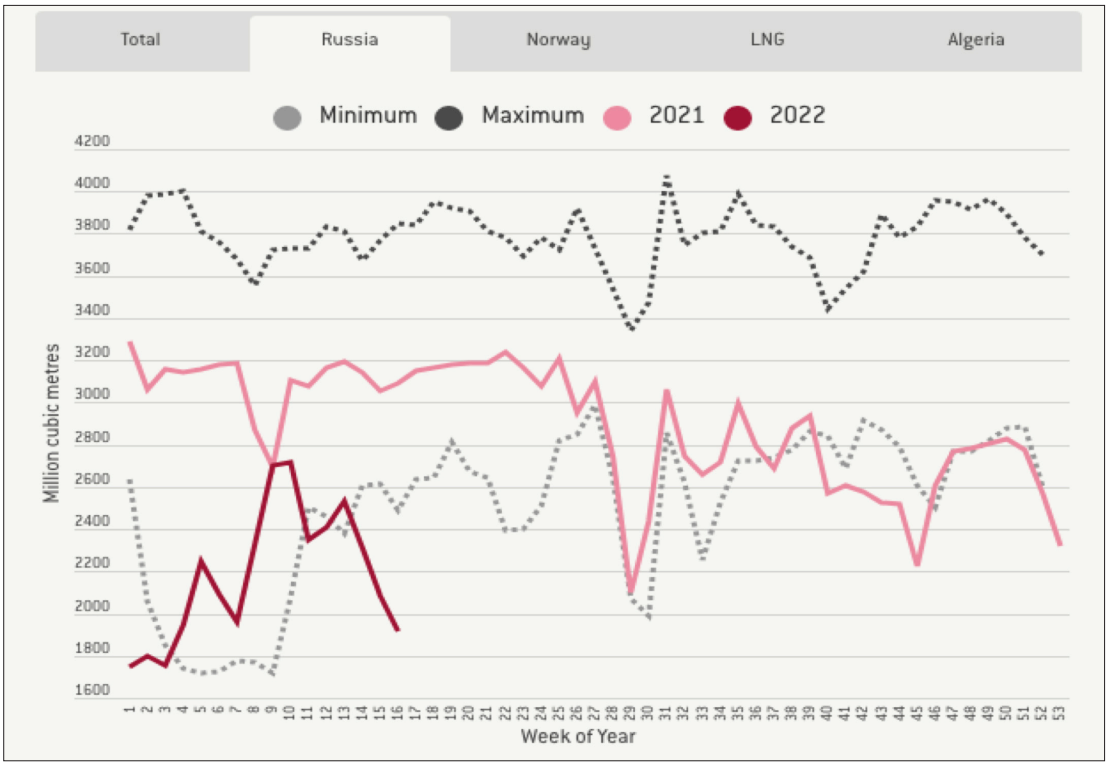

Figure 4: EU Natural Gas Imports
Source: *Bruegel, (2022)*

lowest figure in six months. Many worldwide brands and significant companies, from technology to automotive and energy, have halted operations in Russian Federation as a result of the special military operation carried out on February 24. Some businesses have ceased operations and deliveries, while others have cancelled their investments in Russian Federation or pulled out of joint ventures. Similarly, before the Ukraine operation and Western sanctions, Russian Federation's exports surged by 72% year over year, reaching 45.93 billion dollars in January 2022. However, Russian Federation put an export restriction on more than 200 products, including telecommunications, medical, automobile, agricultural, and electrical equipment, in response to Western sanctions in March (Central Bank of Russia, 2022). The import and export figures between the EU and Russian Federation are presented in Figure 3 below.

As seen in Figure 3, Russian Federation's exports with the EU remained stable, while imports increased after 2020. The expectation of a 40% decrease in Russian Federation's exports after the Russian Federation special military operation to Ukraine will also affect its imports. In fact, Russian Federation was the fifth largest exporter of products to the EU (4.1%) and the third largest importer of goods to the EU in 2021. (7.5%). Germany was the EU's leading importer of products from Russian Federation and exporter of goods to Russian Federation in 2021 (Eurostat, 2022). According to the latest data, EU's gas exports from Russia are given in Figure 4 below.

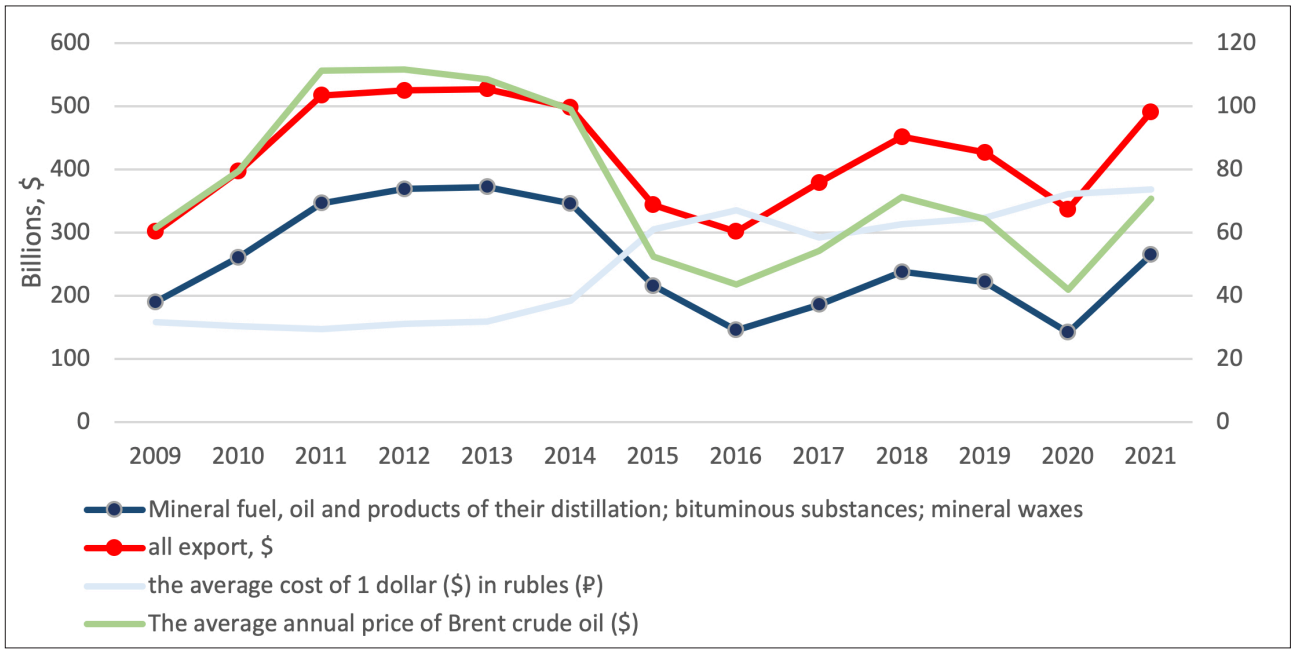

Figure 5: Correlations of Changes in All Exports and its Separate Category of "Mineral Products" in Conjunction with Changes in the Ruble Exchange Rate and Cost of Brent's Barrel (2009-2021)

Source: *Federal Customs Service of the Russian Federation, Statista, Central bank of the Russian Federation (2022)*

Figure 4 compares weekly extra-EU natural gas imports in 2021 to weekly minimum and maximum import levels from 2015 to 2020. There is a serious decrease in the EU's gas purchases from the Russian Federation as of March 2022. Many EU member countries have stated that they will gradually reduce their gas and oil purchases from Russia. In fact, some countries have even stated that they will reduce their contributions. These statements, we believe, are far from accurate. It is conceivable to progressively reduce EU oil and gas use, but it is not possible to do so abruptly.

Energy Resources – Data

The cause-and-effect link between energy and income has been extensively researched in the literature on energy economics. In pioneering studies, Granger (1969) and Kraft and Kraft, (1978) found unidirectional causality running from GDP to energy consumption. It has also been confirmed in later studies that there is a causal relationship between energy and economy (Isik et al. 2021; AlKhars et al. 2020; Tang et al. 2016; Isik, 2010). Therefore, the energy data for Russia is assessed in this part from an economic perspective.

The Russian Federation's economy is heavily reliant on the sale of its mineral resources, such as oil and gas. However, because of the existing circumstances, it may be an issue for future development as the primary consumers may refuse or cut their demand and switch to another supplier according to the theory of strategic management (Porter, 2008). In Figure 5 below, exports in the field of energy are shown by category.

As seen in Figure 5, the all exports are more dependent on changes in energy prices and the volume of their sales, which is confirmed by the high correlation of graphs. The inverse proportion is observed between the oil price and the ruble exchange rate, which was described in a study by Movchan&Kiryu (2017) on what makes up the value of the ruble exchange rate. For example, before the start of the military special operation, the retention of the ruble exchange rate with high volatility of oil prices was carried out through the sale of gold and foreign exchange reserves of the Central Bank of Russia, however, after their freezing, this instrument ceased to be relevant and possible to use, which was reflected in the short term on the ruble exchange rate and its nominal growth to 120 rubles per 1 dollar (Banki.ru, 2022). The Central Bank of Russia has made attempts to curb the nominal growth of the ruble exchange rate against the dollar and euro: introduced a rule for the sale of 80% of foreign exchange earnings by exporting companies within 3 days after the payment was made by importers, limited the export of foreign currency (dollar and euro) to 10 thousand, and other tools were used to stabilize the situation on the foreign exchange market (CBR, 2022). While it is difficult to assess the effectiveness of these solutions, however, the current value of the dollar and the euro ranges from 70-80 rubles. Despite this, the White House calls the ruble exchange rate "artificial" (Bedingfield, 2022), due to the

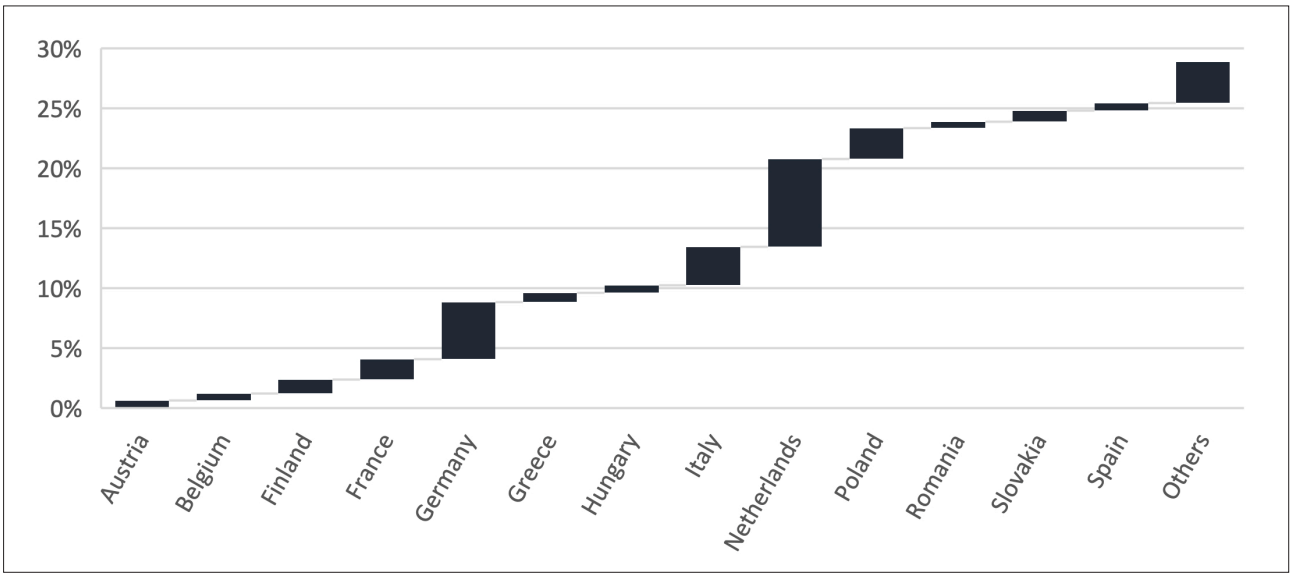

Figure 6: The Shares of Imported Oil and Gas from Russian Federation Accounted for by the Countries of the EU (2021)
Source: *Federal Customs Service of the Russian Federation, (2022)*

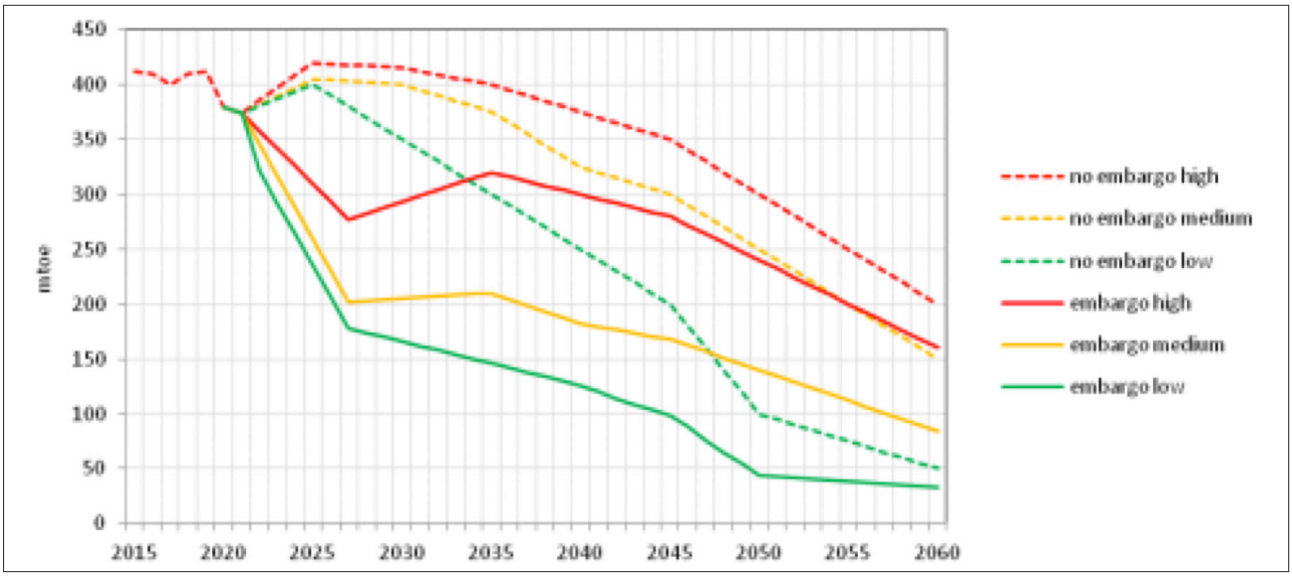

Figure 7: Exports of Russian Federation Oil and Petroleum Products Adjusted for the Impacts of the Embargo
Source: CENEf-XXI, (2022).

unavailability of foreign exchange transactions on the exchange by foreigners, the suspension and termination of contracts with many foreign companies that made payments in foreign currency.

Despite a long list of sanctions, the category of energy exports was the least affected. European policymakers are still debating the possibility of a short-term restriction on oil and gas supplies. This could cause serious economic consequences for both parties. For instance, "The German economy will collapse if we entirely stop oil and gas imports from Russian Federation," claimed analyst Dr. Stelter (Stelter, 2022). The EU is one of Russian Federation's most important customers. In 2021, mineral resources such as oil and gas will make for 56% of Russian Federation's overall exports, but just 29% of that 56% will be to Europe (Federal Customs Service of the Russian Federation, 2022). Figure 6 illustrates Russian Federation's gas and oil exports to European countries.

As seen in Figure 6, Germany, Italy, the Netherlands, and Poland are the biggest users of oil and gas. Despite the fact that the Polish authorities talked about a sharp decline in oil and gas imports from Russia (Scislowska and Jordans, 2022), they have become leaders in the purchase of energy resources (Interfax, 2022). For years, economists have cautioned both Western countries and Russian Federation about their high reliance and the need to diversify supplies to mitigate the risks of EU sanctions and Russian Federation oil and gas supply

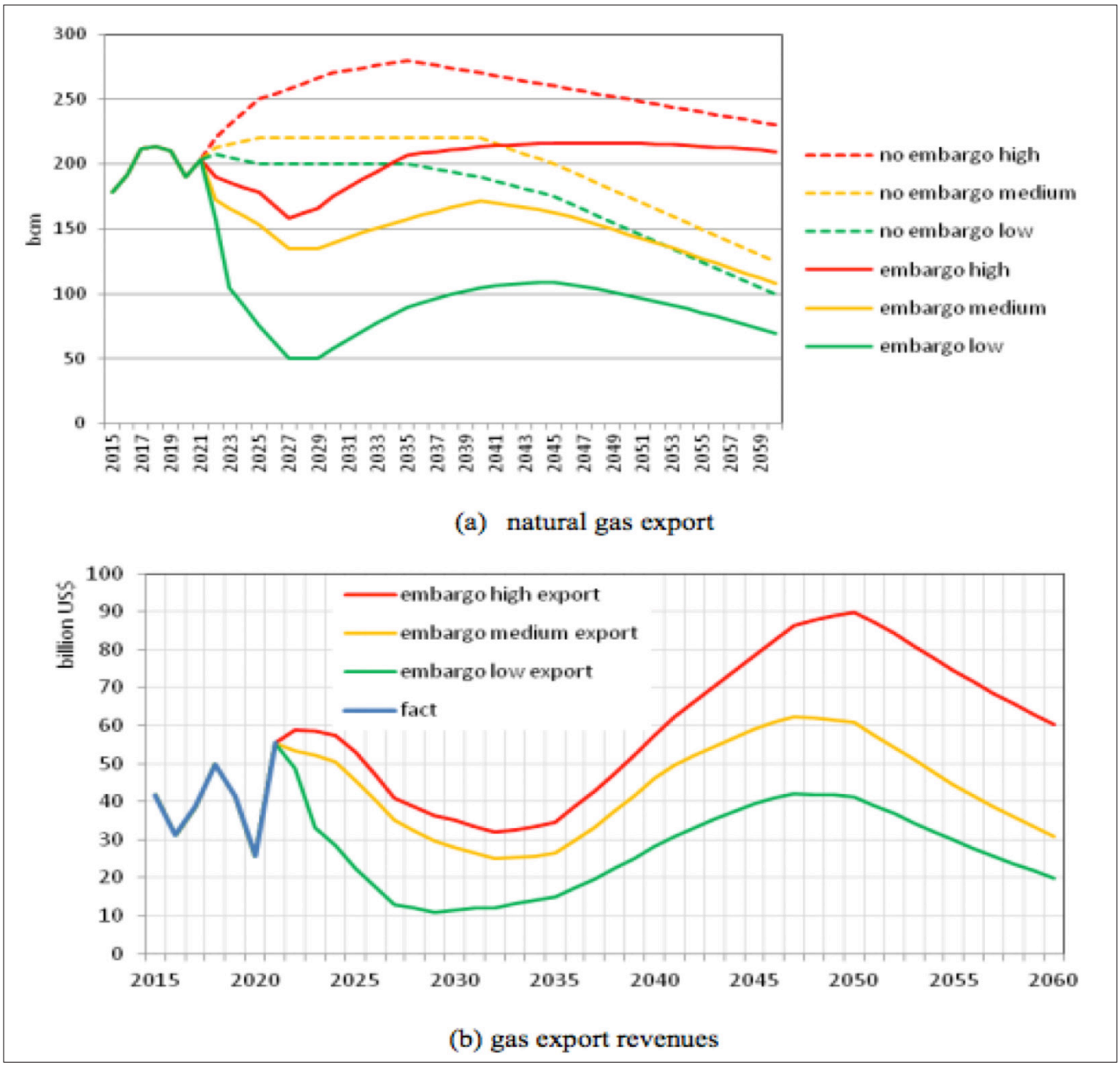

Figure 8: Export Revenues and Russian Federation Pipeline Gas Exports with Embargo Impacts
Source: CENEf-XXI, (2022).

manipulation. Other large clients, however, may be able to raise their oil and gas purchases. However, because of the potential of sanctions, many governments strive to avoid cooperating (Interfax, 2022).

If the sanctions are imposed, the entire market loss of Russian Federation oil is expected to be 200-230 mtoe by 2027, or 52-60 percent of 2021 exports (383 mtoe), or 38-44 percent of Russian Federation's total production (524 mtoe). However, in the rising phase of the cyclical energy price evolution, if around 1 mbd in 2022 and 4-5 mbd by 2027 are removed from the global market (which is around 100 mbd), oil prices could reach US$100/b. or higher, but the average annual price could increase 50-80% from $67/barrel in 2021 to $100-120/etc in 2022. In this instance, despite the embargo in 2022 and the following years, Russian Federation's oil income may raise over 2021 levels. The embargo's impacts may only become painful for Russian Federation if oil prices fall dramatically and supply declines near 2027 (Bashmakov, 2022). Considering Russian Federation's oil and petroleum products exports, export prices and embargo effects, export revenues are expected to be as in Figure 7 below.

As seen in Figure 7, Russian Federation oil exports may recover considerably in the medium term following the considerable fall in 2022-2027, but in the longer run, they will "probably" decline faster than projected before February 24.

As for natural gas, the EU has announced the REPowerEU strategy, which aims to achieve energy independence from

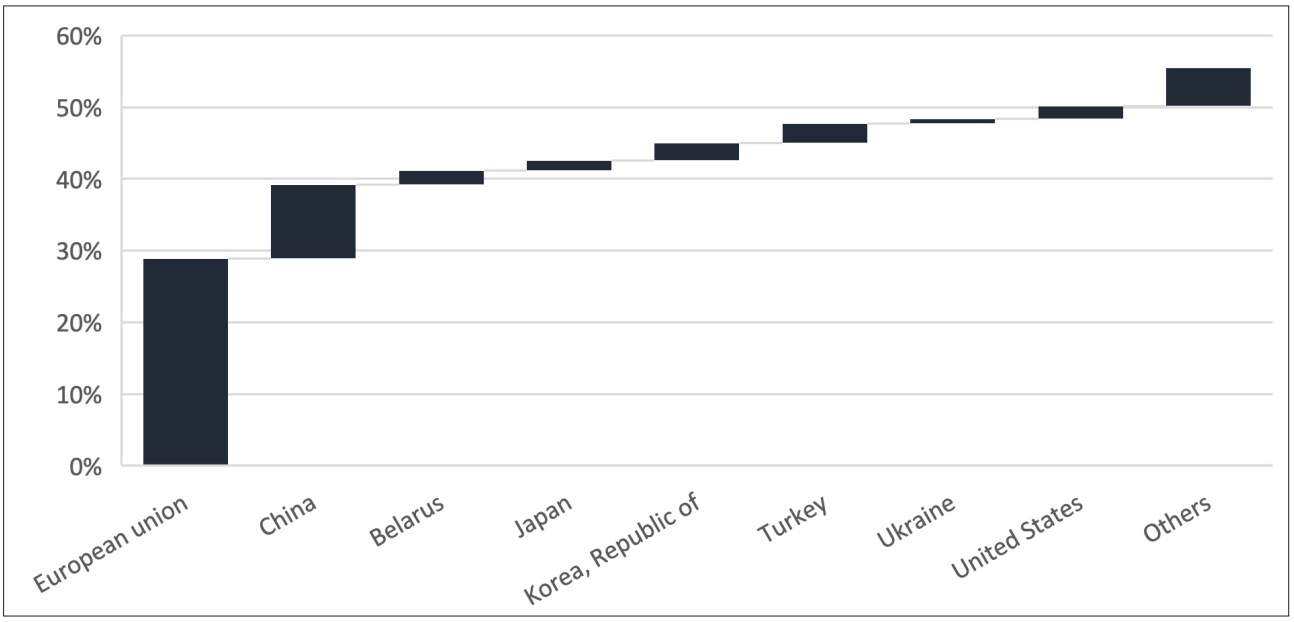

Figure 9: The Shares of Imported Oil and Gas from Russian Federation Accounted for by the All Countries (2021)
Source: Federal Customs Service of the Russian Federation, (2022)

Russian Federation, notably gas. It seeks to cut Russian Federation gas demand by two-thirds by the end of the year and completely restructure the energy system by 2030 (Kotian et al. 2022). At the beginning of March 2022, the IEA published a *"10-Point Plan to Reduce the European Union's Dependence on Russian Federation Natural Gas",* and the declines in natural gas demand from Russian Federation were evaluated in 10 plans. These plans include not attempting to enter into a new gas supply agreement with the Russian Federation, using gas from alternative sources, reducing Russia's gas storage responsibilities, maximizing production with low-emission resources by speeding up renewable energy projects, and improving energy efficiency in buildings and industry (IEA, 2022). This plan aims to reduce gas imports from the Russian Federation by 40 billion cubic meters by 2030, and this plan could potentially bring 30 billion cubic meters of gas from sources outside the Russian Federation. It is also aimed to reduce Russian gas use by 6 billion cubic meters with the use of renewable energy. Furthermore, the EU would need 13 billion cubic meters less gas for electrical generation if it used nuclear and biofuels instead of Russian gas. In addition, 2 billion cubic meters can decrease gas consumption in a single year by assuring energy efficiency in houses and industry (IEA, 2022).

Overall, these items might lower EU demand by 3-40 billion cubic meters in the immediate term, and by 60-75 billion cubic meters by 2030. It will be difficult to totally eliminate the EU's reliance on Russian Federation gas imports by 2027. Figure 8 depicts possible embargo implications on Russian Federation's gas shipments.

According to Figure 8, if the EU manages to cut Russian Federation gas imports by 100 billion cubic meters in 2022 and 150 billion cubic meters in 2027, Russian Federation's total pipeline gas exports might decline to 50 billion cubic meters by 2027. The Russian Federation, on the other hand, may take up on this as it expands into new markets free of sanctions. In addition, market pressure will develop to maintain gas prices high as demand for alternative supplies (to replace Russian Federation gas) grows. Despite a steep drop in export volumes, Russian Federation's gas export revenues in 2022 could exceed those in 2021. By 2025-2035, Russian Federation is predicted to have income from gas exports that are nominally comparable to or below those of 2020, but that are substantially lower when import price growth is included in. As a result, measures to lessen Russian Federation's reliance on gas will only have a visible impact on Russian Federation's export revenue after 2025. Finally, Figure 9 depicts the distribution of countries that buy Russian Federation oil and gas.

China is one of the top consumers of Russian Federation oil and gas, as seen in Figure 9, and continues to boost mineral product imports despite sanctions. Furthermore, the subject of lowering CO_2 emissions into the atmosphere is still on the table. There was no mention of any plans to push back the timeframes for reaching carbon neutrality. Plans may, however, change, and deadlines will almost certainly be extended. All of these could impact the decision to speed up the search and switch to different suppliers, or to look for other options (Interfax, 2022).

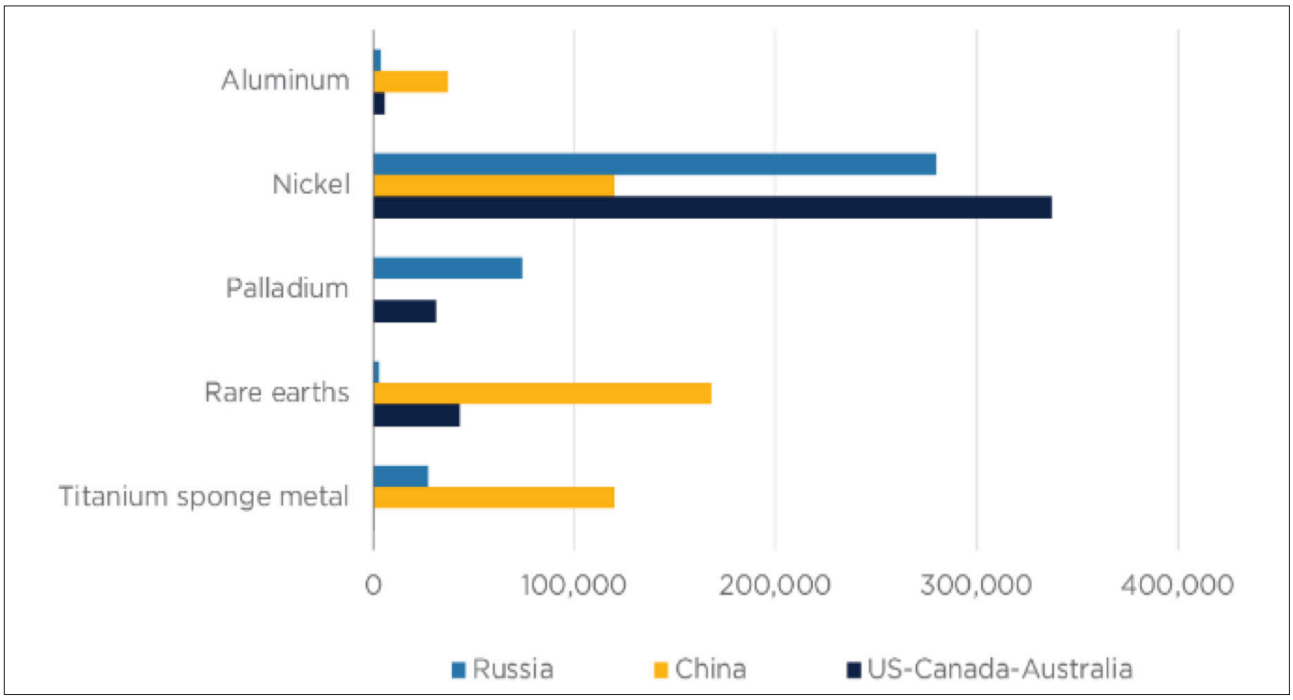

Figure 10: The Annual Output of Essential Minerals in 2021 (1,000 Tons)
Source: Natural Resources Canada and US Geological Survey

In addition, following Russian Federation's special military operation in Ukraine, the US and EU governments are focusing sanctions on critical minerals such as aluminum, nickel, palladium, scandium, and titanium rather than Russian Federation's main oil, gas, and coal energy resources (Johnston, 2022). However, bottlenecks and risks in the supply chain of crucial minerals, which are a raw material for a variety of major industries ranging from renewable energy to batteries, all of which play a role in the clean energy transition, come to the fore. Minerals are not only important, but they are also predicted to have rapid demand increase, thanks to their involvement in the energy revolution For instance, according to the IEA's Sustainable Development scenario, nickel demand for use in batteries for electric vehicles and backup energy storage for variable renewable electricity will rise from 196,000 tons in 2020 to 3,804,000 tons in 2040. Russian Federation will be the world's third-largest nickel producer in 2021, accounting for 10% of global supply (IEA World Energy Outlook Special Report, 2022). The annual output of essential minerals in 2021 is depicted in Figure 10.

As seen in Figure 10, Russian Federation also plays a significant role in key minerals. The EU is Russian Federation's biggest market, and with these sanctions, the EU may pick China or the US-Canada-Australia for mineral imports as an alternative to Russian Federation. While Russian Federation is expected to find new markets in the net-zero carbon energy transition, the EU will be in a difficult position.

SANCTIONS IMPLEMENTATION AND REACTIONS – CASE OF OIL AND NATURAL GAS SECTOR

Sanctions against Russian Federation's oil and gas exports will be imposed if the West continues to implement sanctions. Energy costs will raise much further as a result of the sanctions imposed on Russian Federation oil and natural gas. Following Russian Federation special military operation to Ukraine, Brent oil prices rose beyond $100 per barrel, reaching their highest level since 2014 (Liadze et al. 2022). By the end of 2022, some countries (the US, the UK, and Australia) have indicated that they will restrict Russian Federation oil, liquefied natural gas, and coal imports. The EU has urged that by 2027, Russian Federation's reliance on fossil fuels be phased out. According to the US Department of Energy, Russian Federation was responsible for 26% of OECD oil and oil imports in November 2021: 17% for OECD-America, 34% for OECD-Europe, 3% for Japan, and 9% for South Korea. Russian Federation oil has a foreign market share of more than 55%, which might be damaged by sanctions (Bashmakov, 2022). In other words, Russian Federation will lose 188-217 mtoe of the EU petroleum market by 2027 if the EU embargo timeline is adopted and fully enforced. The EU is responsible for the majority of this drop. The EU oil demand decrease is limited to 95 mtoe in the IEA's published promises scenario. As a result, even if the EU as a whole is politically committed to implementing the entire demand reduction potential, and the predicted consumption fall is completely due to Russian Federation

oil supply restrictions, an additional amount (60-100 mtoe) will be necessary (Eurostat, 2022).

Essentially, the current sanctions being applied to the Russian Federation economy by other countries demonstrate its inefficiency, as the Russian Federation economy was able to survive the first round of sanctions (Bloomberg, 2022). As a result, the majority of countries are advocating for a Russian Federation oil and gas boycott as one of the most effective and quickest ways to "destroy" the Russian Federation economy (European Parliament, 2022). However, the majority of people are unaware of the terrible implications that would befall their country's economy.

As previously said, the EU, China, and other countries are the most reliant on oil and gas, with differing views on how consumption should alter. Regardless of their differing approaches to strengthening sanctions against Russian Federation, none of them will be able to give up gas and oil in the near future. Even in the EU, many MPs are opposed to imposing sanctions, which include a fast-track plan to phase out oil and gas production (ZEIT ONLINE, 2022). However, countries such as Canada and the US are adamantly opposed to oil and gas. They only accounted for a small portion of the Russian Federation's total exports. As a result, both for them and for Russian Federation, these were minor setbacks. The price of oil, on the other hand, has risen sharply and is likely to rise more as the search for a replacement supplier is likely to take a long period. For example, despite competitor "Shell" announcing an early exit from the Russian Federation market and abandoning their oil and gas reserves, the large corporation "BR" has decided to phase out mineral products from the country (RBK, 2022; Oil Needle, 2022).

Furthermore, Russian Federation's economy is already undergoing structural changes as a result of sanctions, as the governor of the central bank recently stated (Vedomosti, 2022). Because changing traditional sales markets and reorienting to trade with Asian countries is impossible in the short term, the European Union's imposition of a "embargo" on Russian Federation's economy might be disastrous. The European Union, on the other hand, faces the same challenge, as the quest for alternate energy sources has failed. Such a decision could result in mutual destruction, with the outcome depending on who is first to make concessions or whose economy would live longer (Stelter, 2022).

Many economists in Russian Federation and Europe believe that a comprehensive embargo on Russian Federation oil and gas for 1-2 years is unrealistic (Krutihin, 2022). However, everyone agrees that Europe will progressively lessen its reliance on Russian Federation gas and oil supplies. Despite the fact that Austria has already refused to purchase Russian Federation energy carriers, those who are most reliant on them remain opposed to such restrictions being implemented (RBK, 2022). Similarly, some studies in the literature look at the influence of sanctions on Russian Federation oil and gas production. According to Bachmann et al. (2022), a comprehensive embargo on Russian Federation oil and gas imports would cause the German economy to lose only 3% of its GDP. On the other hand, Chepeliev et al. (2022) suggest that prohibiting Russian Federation's fossil fuel exports would have disastrous consequences for the Russian Federation economy. Unlike these, Guriev and Itskhoki (2022) argue that, due to the record high prices of exported raw materials and capital controls in place, such an embargo cannot destabilize Russian Federation's balance of payments.

In other words, gas and oil sanctions are more likely to affect the EU rather than Russian Federation. Because, with record-high exports, Russian Federation achieved a current account surplus of 490 billion dollars in 2021, accounting for half of all oil and gas products. A probable EU and US oil embargo (50% of Russian Federation oil exports) combined with a two-thirds drop in EU natural gas imports (70% of Russian Federation exports) in 2022 would only reduce shipments by a fifth (European Commission, 2022).

HOW LONG WILL RUSSIAN FEDERATION WITHSTAND THESE SANCTIONS?

The West is attempting to hit Russian Federation's economy with extensive sanctions. The Russian Federation, taking lessons from the sanctions imposed after the 2014 Crimean crisis, limited its dependence on foreign countries. Thus, Russian Federation is more resistive to the sanctions imposed in 2022 and is challenging the West (van Bergeijk, 2022). However, it is very difficult to predict how long Russian Federation can withstand the Western sanctions.

In the study, Russian Federation's resilience against sanctions has been evaluated from two aspects. Despite the Russian Federation economy's struggle to reach dollars and euros, its ability to generate local income and whether the reserves stocked by the Russian Federation central bank and state wealth fund will be sufficient to finance these expenditures. First, sanctions on many Russian Federation commercial banks, investments, and exports mean that Russia must become a barter economy to generate income in stable currencies (Astrov et al. 2022). In most cases, the country can earn dollars and euros by investing abroad or

exporting goods and services. Russian Federation's ability to produce export revenue has been severely hampered by the export restriction. In fact, Russian Federation's only means to get dollars or euros is to export oil and gas and pay through Gazprombank, one of the few significant Russian Federation financial institutions that hasn't been kicked out of the SWIFT system yet (Klement, 2022). If Russian Federation cannot earn dollars and euros to get payments in rubles for oil and gas exports, how will it pay for imported food, medicine, and other civilian goods in dollars and euros?

Second, Russian Federation's trade deficit is growing, and aside from paying for essential goods, it should theoretically be able to pay off its foreign debt and fund the special military operation. Russian Federation will have to dip into its central bank reserves and the National Welfare Fund, its sovereign wealth fund, to fulfill these costs (Klement, 2022). According to Bloomberg, Russian Federation's Central Bank had $630 billion in international reserves by the end of 2021, with $468 billion in foreign currency and $132 billion in gold. The G7 central banks, the IMF, and the Bank for International Settlements own 61.3% of the foreign currency (BIS) (O'Brien, 2022). All 61.3% of the central bank's reserves were frozen as a result of the sanctions. The Central Bank's gold reserves are stored locally. The Central Bank of Russian Federation still has access to $132 billion in foreign exchange reserves and the remaining $181 billion in gold reserves because gold reserves are maintained domestically. The Russian Federation government has $488 billion in usable stable currency reserves, with another $174 billion in reserves held by the National Welfare Fund (Klement, 2022). However, Russian Federation has enough resources for the sustainability of its economy. Without funding of special operation, cause it's very important to hedge (smooth out) such formulations.

CONCLUSIONS AND LESSONS LEARNED

Western leaders and policy analysts have referred to the economic sanctions imposed on Russian Federation in 2022 as "unprecedented." Furthermore, Iran has surpassed Russian Federation as the country subjected to the most sanctions with the imposition of sanctions on Russia in 2022. Economic sanctions against Russian Federation have a long-term impact, and the EU's application of sanctions in the global energy sector is expected to have a faster impact on Russian Federation.

Special military operations and sanctions, even in the absence of a possible oil and gas embargo, are expected to pull the Russian Federation into an economic catastrophe in the long run. It will survive on the present export model, which is the Russian Federation economy's major pillar and keeps it afloat. However, the Russian Federation people will once again face severe hardship and rising food price inflation (Mamonov et al., 2021). This will have a big negative impact (spillover effect) not just on the Russian Federation people, but also on the people of numerous developing countries throughout the world, and global food prices will rise (Artuc et al. 2022). Furthermore, Kalish (2022) mention that the sanctions implemented by several Western countries as a result of the conflict between Russian Federation and Ukraine raised the possibility of commodity trade disruption, particularly in the sale of oil and gas products to Europe. This risk manifests itself in a sharp increase in commodity prices, which might lead to even higher global inflation and lower global GDP. Furthermore, the sanctions have caused several businesses to avoid doing business with Russian Federation, potentially disrupting vital supply chain. The size of the economic damage will be determined by how the special military operation unfolds and how it impacts global commodity commerce.

Increasing uncertainty is one of the prominent phenomena of today's modern economic systems (Isik et al. 2020). This uncertainty not only affects macroeconomic parameters, but also affects changes in energy use. Therefore, these sanctions may require EU countries to move towards more clean energy, while also requiring the Russian Federation to find new destinations for gas exports. It is proposed that the Russian Federation and Ukraine establish a center ground and that this military operation be completed in order to end the economic sanctions, both for the domestic energy-economic market in the Russian Federation and the global energy-economic market.

Briefly, the sanctions placed on Russian Federation by a number of nations are anticipated to have a long-term impact on the Russian Federation economy, but they will also raise food and energy costs globally. As a result, these special military operation and sanctions will have an "inflationary" effect on both the Russian Federation economy and the economies of many emerging countries. Therefore, Russian Federation's willingness to end its operation against Ukraine diplomatically is critical for the country's future.

The main limitation of this study is to reveal the effect of the sanctions applied after the conflict between Ukraine and the Russian Federation, empirically. Therefore, future studies will focus on the question of *"What impact will economic variables have on the global energy sector as a result of the Russian Federation's sanctions in 2022?"* When data from 2022 is available, the answer to this issue will be determined empirically.

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A Web-Based Expert System Application for Working Capital Management

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ABSTRACT

The aim of this study is to develop an expert system application called SME Emergency for working capital management (WCM) in Small and Medium-Sized Enterprises (SMEs). SME Emergency performs financial analyses for WCM and thus evaluates the WCM performance of the enterprise. There is no independent audit obligation for SMEs operating in Turkey. Therefore, the data of 283 enterprises listed in the BIST All Shares between 2012 and 2020 were used in the development of this application since they do not differ in terms of working capital characteristics, and the data of publicly traded enterprises are subject to independent auditing. The SME Emergency presents the general performance of the enterprise about WCM. In addition, it evaluates the success of the enterprise according to the industry within the framework of WCM determinants and presents its position compared with enterprises in the industry. In this context, the enterprise's financial performance in terms of WCM can be interpreted, and suggestions can be made in the case of unsuccess.

Keywords: Working Capital Management, SME Emergency, Artificial Intelligence, Expert System.

JEL Classification Codes: C67, C88, G31, G32

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INTRODUCTION

Working capital is explained as the source of finance necessary to support the short-term operations of enterprises. Similarly, working capital is expressed as an investment in current assets (Karadağ, 2015). Working Capital Management (WCM) includes current investment and financial decisions. In other words, it includes planning and controlling short-term investments and debts. In this context, effective WCM contributes to establishing the balance between risk and profit, thus minimizing the risk of non-fulfillment of short-term liabilities (Akın & Eser, 2014).

Although WCM is related to all enterprises, it is more important for SMEs than for large-scale enterprises. Because the profits and cash flows of SMEs are more volatile, their liquidity is low, and these enterprises need more short-term financing due to the financial constraints they face (Boschker, 2011). Therefore, for small and growing enterprises, effective WCM is crucial to be success and survival; in other words, it is important in terms of both profitability and liquidity (Padachi, 2006).

Due to the competition in the changing business environment as a result of technological advancements and digital transformation, data and information management becomes important in enterprises to predict changes in technology, industry tendencies, customer needs, and other factors. However, the development of the information technologies network and user/server structures of the enterprises is necessary for the use of shared knowledge in decision-support environments. Therefore, enterprise managers need more information analysis instruments to assist their decisions in a complex and changing business network (Arias-Aranda et al., 2010).

Expert systems in enterprises are developed for the use of different decision-making groups, such as managers, accountants, financial analysts, strategic planners, and marketers. Likewise, expert systems help minimize the constraints faced by managers in the decision-making process, such as time, financial resources, and expert advisors (Tan et al., 2016). In this direction, it can be said that expert systems will contribute to enterprises by

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This study is derived from the doctoral dissertation titled "KOBİ'lerde Çalışma Sermayesi Yönetimine Yönelik Bir Uzman Sistem Geliştirilmesi", which was completed in 2021 by Yusuf GÜNEYSU at Karadeniz Technical University, Institute of Social Sciences, Department of Business Administration, supervised by Prof. Dr. Bünyamin ER

facilitating the decision-making process and increasing the accuracy and reliability of decisions.

In the national and international literature, although there are expert systems developed for SMEs, these applications provide information about expert systems (e.g., Zopounidis et al., 1997; Kaynar, 1999; Nedovic & Devedzic, 2002), financial analysis, and performance evaluation (e.g., Matsatsinis et al., 1997; Moynihan et al., 2006; Shiue et al., 2008; Filippidis et al., 2013; Kara et al., 2016; Giraldo et al., 2018). In contrast to the literature, this study considers the factors of WCM and all possible variables that may have an effect on WCM and visualizes the data of these variables. On the other hand, it indicates the success of the enterprise in comparison with the industry average and other enterprises in the industry. In addition, according to the best of the researchers' knowledge, no study has been found on the expert system applications for the WCM of SMEs.

In this study, a web-based expert system application (SME Emergency) was developed, which aims to contribute to SMEs in WCM. In this direction, the study aims to analyze the WCM of SMEs, make comments and suggestions according to the results of this analysis, and thus assist enterprise owners or managers. In the development of the SME Emergency application, the data of 283 enterprises listed in the BIST All Shares between 2012 and 2020 were used. The SME Emergency presents the success of the enterprise in WCM, its position according to previous periods, and other enterprises in the same industry using visuals.

This study consists of four sections. First, the literature review, including studies on expert systems in the field of finance and their applications for SMEs, is offered. Then, the development process and structure of the expert system application are revealed. Finally, the conclusions and recommendations are presented.

LITERATURE REVIEW

This section of the study examines the applications of expert systems in enterprises, especially in the field of finance, and the studies on their applications in SMEs.

Expert systems, one of the important application areas of artificial intelligence, were adopted in the 1970s and became the focus of research in the 1980s. In this direction, expert systems are applied in many areas to support the decision-making process of enterprises. There are many expert systems to support managers in decision-making processes such as accounting, finance, production, and marketing (Wong & Monaco, 1995; Jayaraman & Srivastava, 1996; Metaxiotis & Psarras, 2003; Wagner, 2017; Kütük, 2020). In this context, examples of expert systems related to these fields are given below.

In the field of marketing, there are expert system applications such as EXMAR (aims to assist the marketing planning process), ADCAD (developed to support advertisers in determining targets, copy strategy, and communication approaches), ADDUCE (provides an assessment of consumer response to advertising by researching past advertising experiences), and SHANEX (designed to reveal possible causes of changes in a product's market share rather than estimates of changes in market share) (Metaxiotis & Psarras, 2003).

In the field of production, there are expert system applications such as XCON (product design), LOGIX (developed to adjust order entry, rescheduling, and reordering to improve inventory efficiency), DEC (designed to assist in order management, transportation, warehousing, and sourcing), and capacity planning system called Performance Expert Prototype (PEP) (Jayaraman & Srivastava, 1996).

In the field of accounting, there are expert system applications such as RISK ADVISOR, The Internal Control Model (TICOM), AGGREGATE, Financial Statement Analyzer (FSA), and the Integrated Consulting System (ICS). Accordingly, RISK ADVISOR has been developed to assess audit risks and the economic performance of the customer. TICOM assists auditors in modeling the internal control system and provides queries about this model. AGGREGATE was developed to support decision-makers in designing accounting information systems and financial statements. FSA is designed to perform tasks such as examining entries in financial statements, checking documents submitted, and ratio analysis. ICS has been developed to provide strategic planning and management support in industries with high product diversity (Kütük & Zor, 2020).

Artificial intelligence techniques such as fuzzy logic, machine learning, artificial neural networks, and expert systems are widely used in finance. The scope of expert systems in finance generally includes financial planning and forecasting, portfolio management, and credit evaluation (Matsatsinis et al., 1997; Nedovic & Devedzic 2002; Moynihan et al., 2006; Shiue et al., 2008; Bahrammirzaee, 2010; Yunusoglu & Selim 2013; Milana & Ashta, 2021).

When the expert systems developed in finance were examined, it was seen that Matsatsinis et al. (1997)

aimed to reveal a methodology for the development of expert systems in financial analysis. They applied that methodology in the Financial Evaluation (FINEVA) to evaluate institutional performance and financial capacity. Moynihan et al. (2006) developed an expert system for ratio analysis. Thus, by calculating the ratio and establishing a relationship between the ratios, they were able to present a report on the position of the enterprise and make suggestions in this direction.

Shiue et al. (2008) proposed a knowledge-based system to aid the decision-making process of experts in evaluating the financial positions of enterprises. In this system, 13 basic financial ratios (profitability, liquidity, utility, and long-term solvency) were calculated, and these ratios were categorized according to 5 qualitative criteria (very bad, bad, fair, good, very good). Then the general financial position of the enterprise was determined.

Filippidis et al. (2013) proposed a web-based tool called Statement Analysis (STAN), which allows enterprises to perform financial statement analysis. The STAN application allows the calculated financial ratios to be presented in plain text based on a decision tree analysis. In this context, various financial ratios were calculated by using the yearly data of an enterprise for the period 2007-2011. Information about the financial position of the enterprise was presented by comparing these ratios with the criteria values determined.

Nedovic and Devedzic (2002) aimed to provide information about the approaches and techniques used by expert systems, which are well-known in finance. In addition, they briefly explained an expert system called DEVEX. To explain the expert system approaches and techniques mentioned here, quantitative, and qualitative variables were used in the FINEVA system, which was modeled according to a 5-point Likert scale (not satisfactory, medium, satisfactory, very satisfactory, perfect). In the FINEVA system, the strengths and weaknesses of the enterprises are defined according to this scale through created rules. Likewise, Portfolio Management in Banks (PORT-MAN) selects a variety of products and classifies these products by return on investment and level of risk. It then offers the investment instrument that meets the investor's criteria. On the other hand, in Investment Management (INVEX), investments are divided into 5 groups (very bad, bad, medium, good, very good) according to the criteria determined for some indicator (net present value, return on investment, payback period, etc.) values. Thus, investments from the very good group are accepted, while investments from the very bad group are rejected. The expert system called Financial Marketing (FAME) helps prepare comprehensive recommendations about the financial decision-making processes used in marketing products and services (Nedovic & Devedzic, 2002).

In terms of the applicability of expert systems in SMEs, Torkzadeh & Rao (1988) provided information on expert systems and their benefits for small enterprises. They also examined the role and integration experts and decision support systems (DSSs) for small enterprises. Likewise, McMahon (1990) explained expert systems and DSSs. In addition, he gave information about the issues that expert systems can be applied in the field of finance and expressed the importance of expert systems for small enterprises.

Seth et al. (2015) reviewed the studies done in this field to develop expert systems for SMEs worldwide. In this direction, they concluded that SMEs operating in India had a high potential for the implementation of expert systems. However, Khitilova (2017) reviewed whether it was suitable to use expert systems for supplier evaluation in SMEs in the Czech Republic. In this context, SME conditions in the Czech Republic and the appropriate tool requirements for the supplier-customer relationship were defined, and expert systems were explained in line with the current trends for the evaluation of supplier-customer relationships. In another study, Giraldo et al. (2018) proposed a rule-based prototype system based on fuzzy logic to analyze the financial position of Micro, Small, and Medium Enterprises (MSMEs) and offered alternative solutions related to problem fields. In this framework, they first determined the possible diseases related to the financial field of MSMEs by using the literature and gathered these diseases under three main headings (liquidity shortage, high level of indebtedness, and insufficient capital). Afterward, they created various rules for determining an enterprise's financial position and presenting solution proposals related to diseases detected.

Gupta and Celtek (2001) developed a fuzzy logic expert system to analyse the loan applications of small enterprises. The main criteria (repayment capacity, credit history, owner investment, and management capability) and sub-criteria (amount of equity, experience, debt/equity ratio, etc.) in the system were evaluated for membership functions (very low, low, medium, high, very high), and a decision was made whether or not to lend.

St-Pierre and Delisle (2006) aimed to show that comparing helps enhance the operational performance

of SMEs. Accordingly, they presented an expert system (PDG-performance, development, growth) that evaluated the performance of SMEs on a comparing basis. The data required for the PDG system were obtained from the SMEs with a questionnaire. Then relevant data and the reference group characteristics of the SMEs were reported together with colored diagrams through the PDG system.

Pavaloaia (2009) aimed to explain a method for computerizing the field of finance and economics of SMEs in Romania. For this purpose, he combined web technologies with expert systems and spreadsheets. He also used financial ratios in his economic and financial diagnosis process. Thus, he developed a computer-based model accessed through a webpage and obtained the values of the variables from the spreadsheet field.

Iqbal et al. (2014) designed a business intelligence prototype which is suitable for the SMEs' characteristics by analyzing existing studies on the behavioral patterns of SMEs in Indonesia towards information and communication technologies. In this direction, they have developed a knowledge-based expert system prototype using data mining to accommodate decision-making for SMEs.

Hernandez et al. (2015) developed an expert system based on three main criteria (labor, financial, and fiscal) to identify risks for SMEs in Mexico. In this direction, they evaluated the indicators of each criterion according to their priority levels (risk-free, low, medium, high, very high), and the expert system made suggestions to avoid risks. Finally, Singh et al. (2016) proposed a fuzzy expert system to evaluate the sustainable manufacturing of SMEs in Malaysia. In this context, they have created various rules by evaluating the linguistic variables (poor, fair, and good)) in terms of economic, environmental, and social performance criteria, and thus they made performance evaluations of manufacturing SMEs.

When examining the applications of expert systems for SMEs in Turkey, the study of Kaynar (1999) takes attention first. In his study, the researcher aimed to provide information on expert systems used in the world and presented the applications of expert systems used by large-scale enterprises for SMEs. Tütüncü (2002) designed an expert system using the GURU shell, which will aid SMEs and small-scale investors in turning their savings into investments and making suggestions for them about the most suitable investment instrument. In this direction, by comparing the features of the investors with the features of the investment instruments, he made suggestions to the investors about which investment instrument was suitable.

Kara et al. (2016) aimed to develop an expert system with MATLAB software based on the artificial neural network algorithm in technology audit activities. In this direction, they compared the average values of technology management capabilities of 72 SMEs operating in four different industries with expert opinions. Accordingly, they concluded that enterprises using expert opinion performed better.

When previous studies are viewed, it is seen that although there are expert systems developed for SMEs, these applications provide information about expert systems, financial analysis, and performance evaluation. However, when the studies in Turkey are evaluated, few studies are found on expert systems for SMEs. Also, these studies are on performance evaluation and the introduction of expert systems. In addition, to the best of the researchers' knowledge, there have been no studies on the WCM of SMEs.

DEVELOPMENT OF THE EXPERT SYSTEM

In this study, a web-based expert system application (SME Emergency) was designed and developed using expert systems to analyze and evaluate the WCM in SMEs.

Data

In the development of the SME Emergency application, the 2012-2020 period data of 283[1] enterprises listed in the BIST All Shares[2] in Turkey were used. The financial data of the enterprises were obtained from the Public Disclosure Platform (PDP), and the data regarding the categorical variables were obtained from the annual reports of the enterprises. According to the data obtained, the values related to the WCM variables of the enterprises, and the industry averages related to these values were calculated and recorded in the SME Emergency system database.

[1] Financial leasing and factoring companies, venture capital investment trusts, football clubs, banks and private financial institutions, and insurance companies were not included in the application.

[2] SME data were needed in the development of the SME Emergency expert system application, but there were some restrictions on obtaining the relevant data. For this reason, the data of the enterprises listed in the BIST All Shares were used to develop the SME Emergency application. The input and output variables for the SME Emergency expert system do not differ for SMEs or large-scale enterprises. This situation is also seen in the literature (e.g., Wang, 2002; Deloof, 2003; Kieschnick et al., 2006; Nazir & Afza, 2009; Gill, 2011; Doğan & Elitaş, 2014) on working capital management in large-scale enterprises. In addition, enterprise scale (firm size) is considered as a variable in the input layer determined for the expert system. Therefore, large-scale enterprise data were used to create a better rule base for the system. Besides, the rule base can be updated according to SME data.

Table 1. WCM Variables and Description

Variable	Description
Sales Growth	Change in sales to the previous year
Firm Size	Natural logarithm of assets
Board Size	Number of board members or directors
Executive Age	Year of financial data minus executive's date of birth
Firm Scale	Micro, small, medium, and large scale
Relationships with Financial Institutions	Short-term bank debt to total debt
Z Score	[(0.104 ∗ Working capital + 1.010 ∗ Retained earnings + 0.106 ∗ Operating profit + 0.169 ∗ Sales) / Total assets] + 0.003 ∗ (Book value of equity / debt)
Financial Leverage	Total debt to assets
Debt Maturity Structure	Long-term debt to total debt
Cash Flows	Net profit and depreciation to total assets
Liquidity	Difference between working capital and liquid assets to assets
Firm Age	Year of financial data minus the date of incorporation.
Return on Assets (ROA)	EBIT to assets
Gross Profit Margin	Gross profit to sales
Operating Profit Margin	Operating profit to sales
Opportunity Cost of Keeping Cash	Difference between ROA and treasury bills rate
Investment Policy	Current assets to assets
Financing Policy	Current liabilities to assets
Export	Yes or no
Cost of External Finance	[(Interest paid) / (Non-current liabilities + Current liabilities – Creditors) / 2] * 100
Asset Tangibility	Fixed assets to assets
Operating Cash Flow	Net profit and depreciation to net assets
Cash Holdings	Liquid assets to net assets
Assets Turnover	Sales to assets
Current Assets Turnover	Sales to current assets
Fixed Assets Turnover	Sales to fixed assets
Operating Expenses	Operating costs to sales
Financial Expenses	Financial expenses to sales
Current Ratio	Current assets to current liabilities
Quick Assets Ratio	Difference between current assets and inventories to current liabilities
Industry	It is classified as main and sub-sector
Industry Power of Enterprise	Enterprise's sales to industry's total sales
Competitiveness (Price – Cost Margin)	EBIT and depreciation to sales
Inventory Holding Period (INV)	(Inventories / Cost of sales) * 365
Accounts Receivable Period (AR)	(Receivables / Sales) * 365
Accounts Payable Period (AP)	(Payables / Sales) * 365
Cash Conversion Cycle (CCC)	INV + AR – AP
Net Working Capital (NWC)	[(Receivables + Inventories – Payables) / Sales] * 100

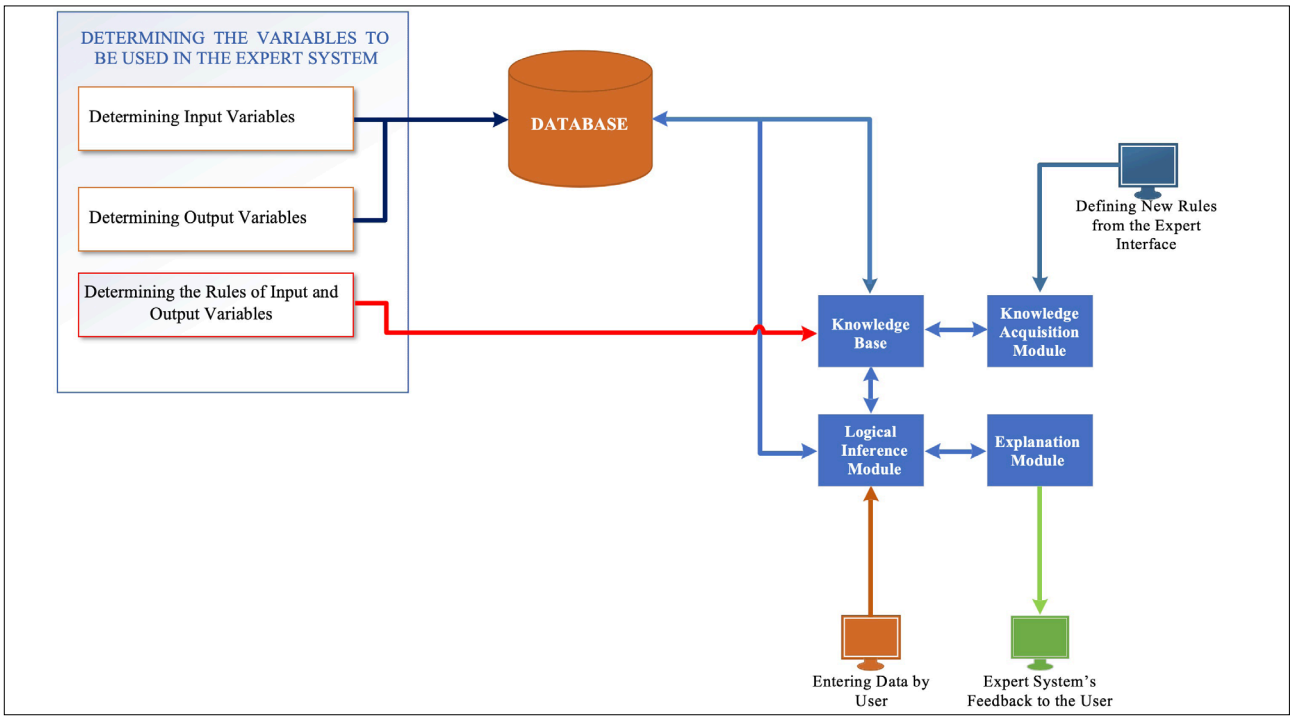

Figure 1. General Structure of the SME Emergency Application

The variables used for WCM and the necessary formulas for calculating these variables are presented in Table 1. While determining the components of WCM and the factors affecting WCM, studies for SMEs were used (e.g., Padachi, 2006; Banos-Caballero et al., 2010; Afeef, 2011; Boschker, 2011; Karadağlı, 2012; Afrifa, 2016). In addition, while determining the factors affecting WCM, studies (e.g., Wang, 2002; Deloof, 2003; Kieschnick et al., 2006; Nazir & Afza, 2009; Gill, 2011; Doğan & Elitaş, 2014) on large-scale enterprises and SMEs were examined. Accordingly, in the study, the WCM performance of enterprises was evaluated in terms of 5 different performance outputs (Inventory Holding Period-INV, Accounts Receivable Period-AR, Accounts Payable Period-AP, Cash Conversion Cycle-CCC, and Net Working Capital-NWC) using a total of 38 different variables.

Development Process of Expert System

The general structure and basic components of the SME Emergency expert system application developed in the study are presented in Figure 1. These components are briefly described below.

The user is defined as the person who provides facts or other information to the expert system and receives expertise or expert advice (Giarratano & Riley, 1998). In the SME Emergency application, users can be owners, managers, accountants, or personnel from the finance department.

The user interface is explained as the unit that provides information exchange and communication between the expert system and the user (Yıldız, 2009). In the user interface module, there is an interface where the enterprises that will use the system can make membership and data entry transactions. Enterprises can update their user profiles whenever they want to access the expert system created through this interface.

The knowledge base is explained as the unit where the information needed by the expert system to solve the problem is stored and allows the production of new information from existing information. The information in the knowledge base generally includes facts and rules (Yıldız, 2009; Nabiyev, 2016). The knowledge base consists of two components: a database and a rule base.

The database is expressed as storage where facts describing the present status of the problem and attribute-value pairs obtained until a certain moment are stored (Allahverdi, 2002). In the study, the MySQL server was used to create the database, and the phpMyAdmin application was used for database management. The database of the developed application includes the values of WCM variables calculated based on the 2012-2020 period data of 283 enterprises and the industry averages of these values. In addition, the information entered by users via the business information entry form and the values for the WCM variables calculated within the framework of this information are transferred to the database. A visual sample from the database is presented in Figure 2.

firm_data_id	year	firm_name	main_sector	sub_sector	output	sales_growth	firm_size
4925	2019	AVOD	Manufacturing	Food, Beverage, and Tobacco	Partially Successful	0.271249	5.602252
4926	2019	ACSEL	Manufacturing	Chemicals, Petroleum Rubber and Plastic Products	Partially Successful	0.343005	3.900923
4927	2019	ADANA	Manufacturing	Non-Metallic Mineral Products	Unsuccessful	-0.126309	7.040673
4928	2019	ADBGR	Manufacturing	Non-Metallic Mineral Products	Unsuccessful	-0.126309	7.040673
4929	2019	ADNAC	Manufacturing	Non-Metallic Mineral Products	Unsuccessful	-0.126309	7.040673
4930	2019	ADEL	Manufacturing	Other Manufacturing Industry	Unsuccessful	-0.098674	5.964918
4932	2019	AFYON	Manufacturing	Non-Metallic Mineral Products	Partially Successful	-0.067735	6.474383
4933	2019	AKENR	Electricity Gas and Water	Electricity Gas and Steam	Partially Successful	-0.177292	8.835512
4938	2019	ATEKS	Manufacturing	Textile, Wearing Apparel and Leather	Successful	0.159573	6.596076

Figure 2. A Sample Visual of Defining Data to The Database

Table 2. A Sample View from the Rule Base

Rule No	C1*	C2*	C3*	C4*	Average	**Output**
1	1	1	1	1**	1	Very unsuccessful
2	1	1	1	2**	1.25	Very unsuccessful
3	1	1	1	3**	1.5	Unsuccessful
4	1	1	2	1	1.25	Very unsuccessful
5	1	1	2	2	1.5	Unsuccessful
6	1	1	2	3	1.75	"
7	1	1	3	1	1.5	"
8	1	1	3	2	1.75	"
9	1	1	3	3	2	Partially successful
10	1	2	1	1	1.25	Very unsuccessful
.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.

*Represents the conditions in Figure 3 **1=low; 2=normal; 3=high

The rule base is called the storage that the expert system has to store a set of rules that work in certain circumstances and are in the form of "If-Then" or otherwise (Allahverdi, 2002). The "IF…THEN…ELSE" structure was used to create the rule base for the SME Emergency expert system application.

Table 2 presents the rule base on how the success or unsuccess of enterprises is determined. Accordingly, the section shown on the left side of the table presents the rule base prepared numerically. On the right side of the table, there are rules created on the basis of the letters. While determining the number of rules, the positions (low, equal, and high) between the variable values used to obtain the conditions and the number of conditions were used. In other words, the number of rules was obtained as 3^4=81. In determining the outputs, the value (2/5= 0.4) obtained by dividing the

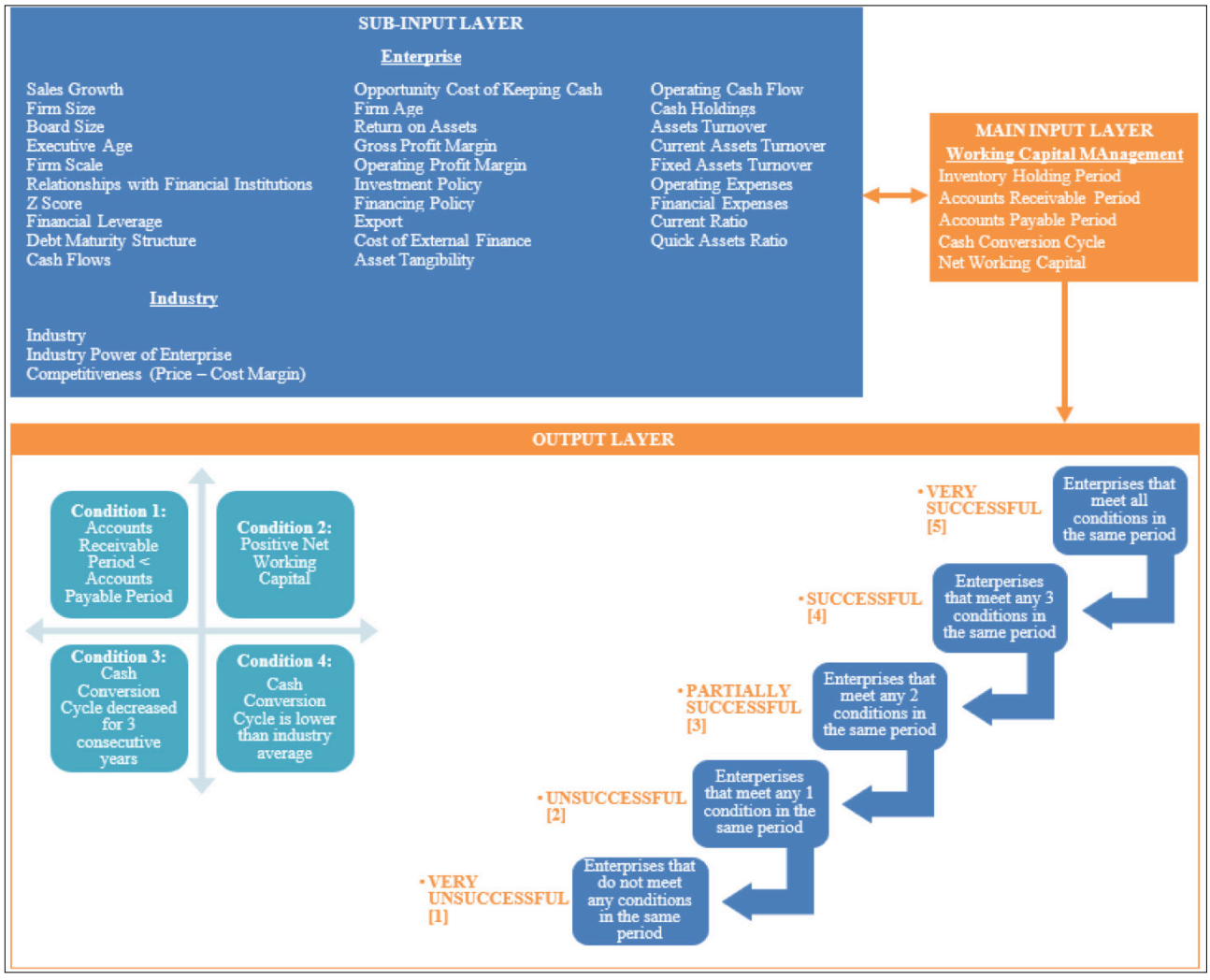

Figure 3. Input and Output Layer of WCM

interval values (there are two intervals between 1-2-3 values) by the number of outputs (very unsuccessful, unsuccessful, partially successful, successful, and very successful) was used. Accordingly, outputs (e.g., very unsuccessful if the average value is between 1 and 1.4) were determined according to every 0.4 increase from 1 to 3.

The data recorded in the database were transferred to the logical inference module together with the rules in the knowledge base. In addition, new rules can be added and updated using the ***knowledge acquisition module***.

The inference engine is described as a unit that searches, filters, interprets, and generates solutions in the knowledge base and has two types of inference methods, forward and backward chaining (Öztemel, 2016).

The explanation unit refers to the section where the results are reported by the expert system to be presented to the users (Şahin et al., 2011). Through this unit, the user is given feedback on the WCM of the enterprise. Various graphics and visuals were used in the presentation of the data. In addition, the user can save these visuals as reports or printouts.

The input variables used in the developed SME Emergency system, the success conditions, and the relevant criteria are given in Figure 3. Accordingly, enterprise and industry variables constitute sub-input variables. On the other hand, WCM determinants constitute the main input variables. The output layer, which is created depending on the main input variables, shows whether the enterprises are successful or unsuccessful in terms of WCM efficiency, and a classification is made according to the extent to which they meet the conditions. After determining the WCM performance of an enterprise, if it is unsuccessful, it can be determined in which file there is a problem, and suggestions can be made in this direction.

STRUCTURE OF THE EXPERT SYSTEM

In this section of the study, the webpage designed for the SME Emergency application and the evaluations on the result screen of the application are presented. SME Emergency application is a web-based expert system. In this context, the general structure of the SME Emergency application is presented in Figure 4. This page contains information about the SME Emergency application and accesses the system registration and login screen through this page.

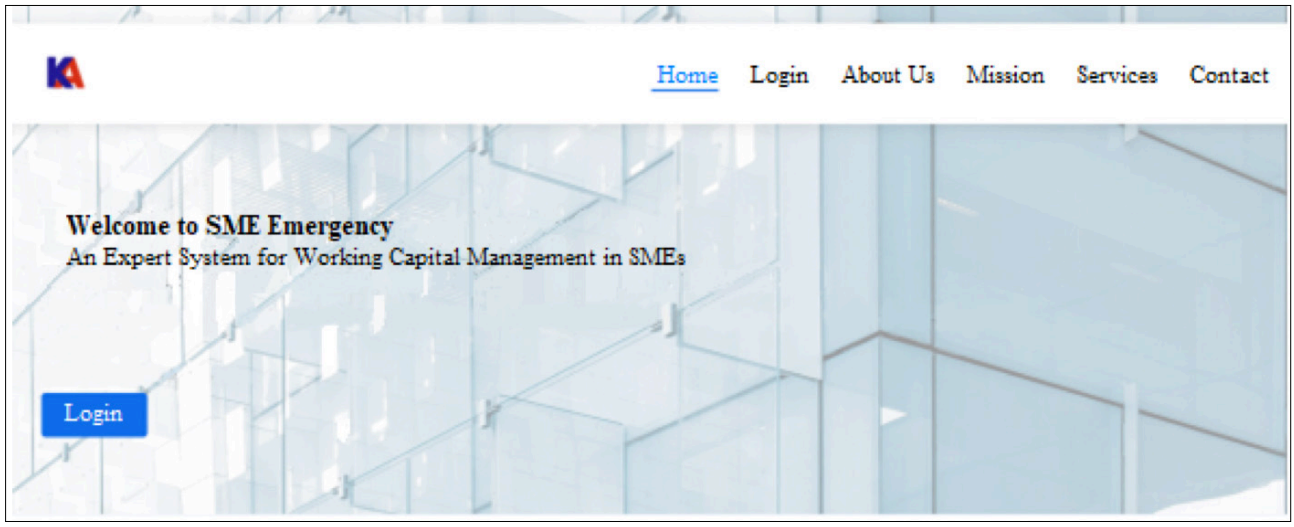

Figure 4. Structure of SME Emergency Expert System

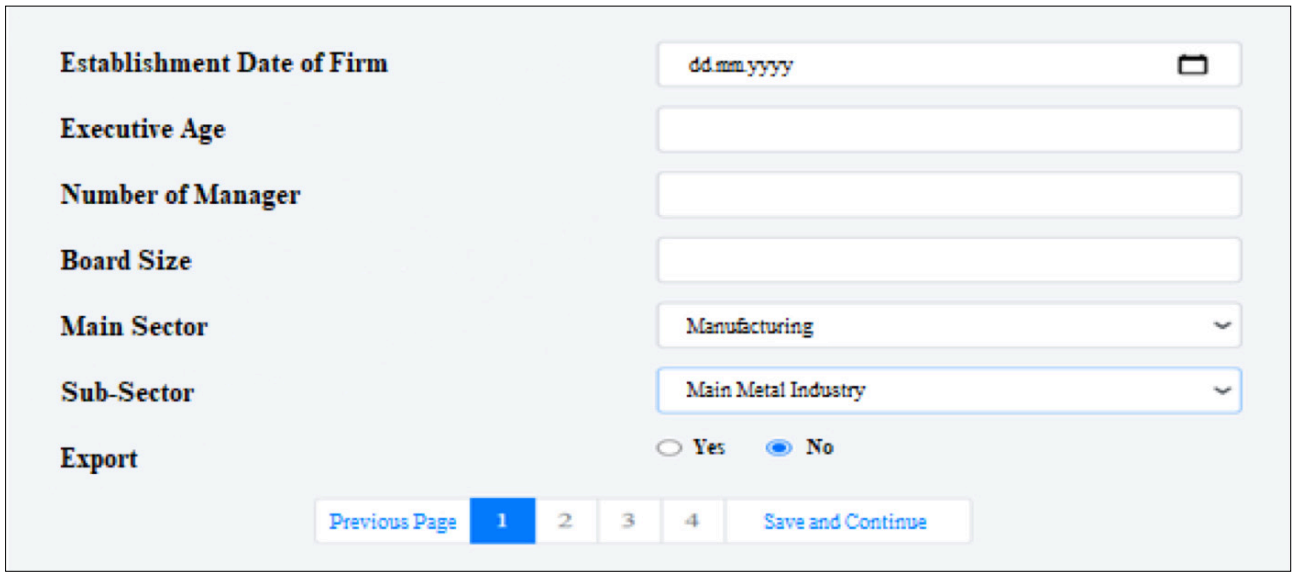

Figure 5. SME Emergency Data Entry Screen

You must be a registered user to log into the application. Registration on behalf of the enterprise or enterprise owner/manager can be created via the registration and login screen of the SME Emergency application. The main screen of the SME Emergency application can be accessed through the created user profiles. The data entry screen required for evaluating the WCM of the enterprise and the frequently asked questions section can be accessed through the main screen of the SME Emergency application.

In the SME Emergency application, the data entry screen of the enterprise is presented in Figure 5. This page consists of four sections and continues by defining the data for the items in each section. After defining the data for each item on this page, the values for the WCM determinants are automatically calculated by the system, and the result screen is accessed.

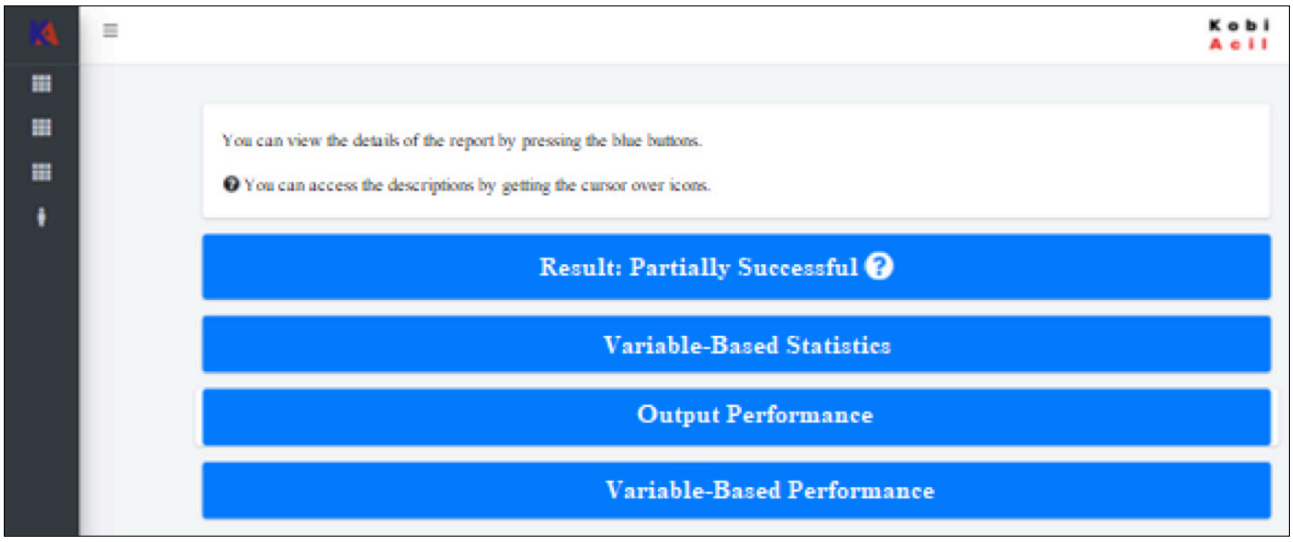

Figure 6. SME Emergency Result Screen

Table 3. A Sample View of Evaluation of Variables by Industry Average

Input Items (Variable)	Industry Average	AVOD	Percent Low/High Compared to Industry Average
Sales Growth	0.2306	0.2695	16.8849%
Firm Size	6.1592	2.4330	-60.4989%
Return on Assets	0.0752	0.0590	-21.5236%
Competitiveness	0.0530	0.2011	279.2643%
Inventory Holding Period	88.6718	207.5818	134.1014%
Accounts Receivable Period	94.3021	53.8479	-42.8985%
Accounts Payable Period	48.6130	81.5642	67.7826%
Cash Conversion Cycle	32.3260	179.8655	456.4109%
Net Working Capital	5.9969	0.3879	-93.5311%

Figure 6 presents the evaluation results screen related to the WCM of the enterprise. On this screen, there is also the interface including the homepage, user guide, system information notes, and logout tabs. In the user guide section, there is information on how to use the system. The system information note section provides information about the aim of the system, the definition and calculation of the variables used, and the performance evaluation process.

On the result screen, details are viewed by clicking on the tabs shown in blue, and related explanations are accessed by using the question mark icons. On this page, first of all, the general success of the enterprise in terms of WCM is presented. With this result screen, the user can access various evaluations related to WCM variables and convert these evaluations to pdf format with the "Receive Report" tab.

In the result screen for WCM, the values of the WCM variables belonging to the enterprise (e.g., A.V.O.D. Kurutulmuş Gıda ve Tarım Ürünleri Sanayi Ticaret A.Ş. – AVOD) are presented in comparison with the industry average, as shown in Table 3. In this direction, the WCM performance of the enterprise according to the industry is presented. If the success is higher according to the industry, it is shown in green; if it is lower, it is shown in red. Here, the industry average for the relevant variable and the average of successful enterprises are used as reference values in order to make the evaluation more sensitive, rather than the values of some variables (investment policy, financing policy, current ratio, and quick ratio) being lower or higher than the industry average. The fact that any variable is indicated in red in this table means that the success of the enterprise is lower in terms of the relevant variable, and suggestions can be made accordingly.

In the result screen, the position of the enterprise in terms of WCM is shown. As presented in Figure 7, the position of the enterprise in terms of WCM according to the main sector and sub-sector in which it operates and the average success status of the enterprises in

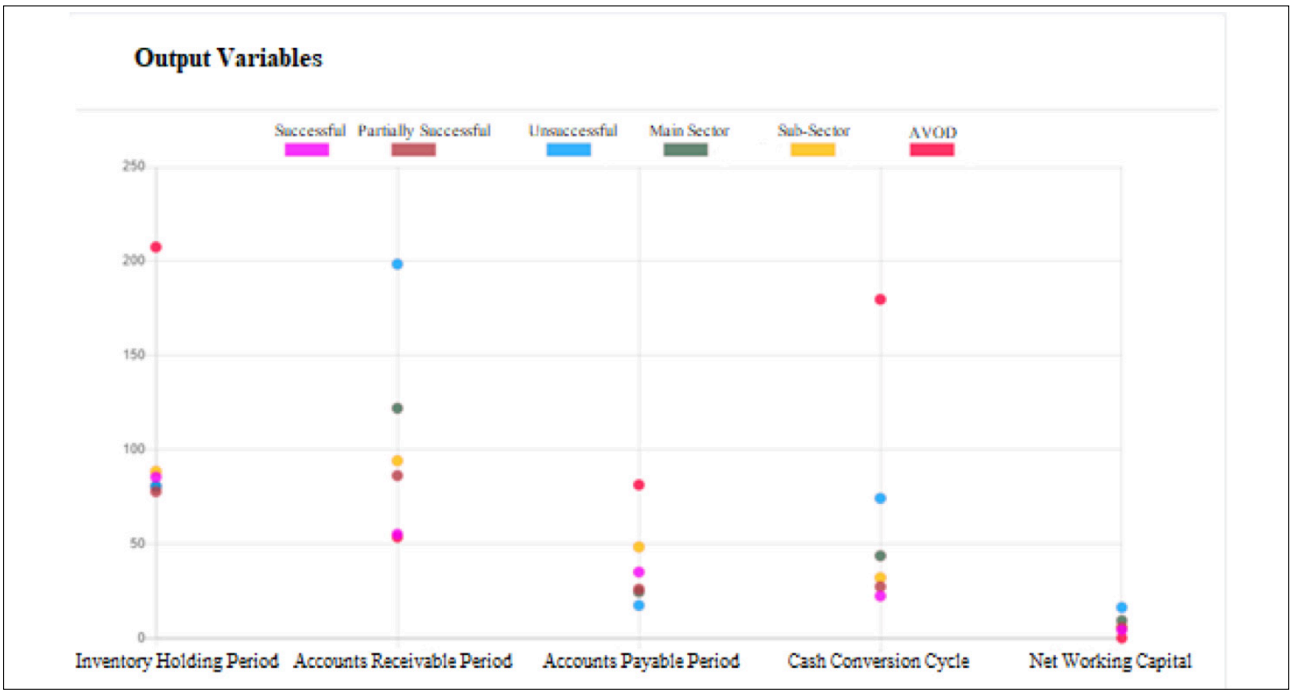

Figure 7. Position of the Enterprise for the WCM Determinants

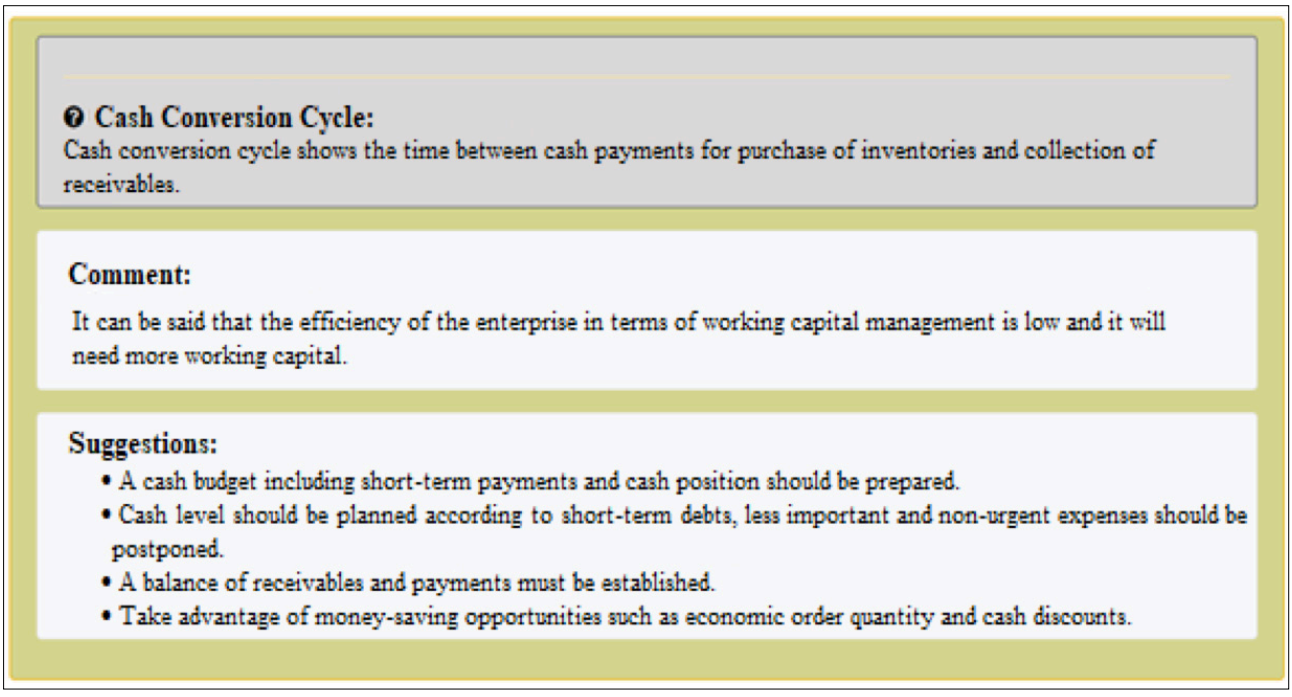

Figure 8. Indicator-Based Interpretation (CCC)

the industry is shown. Accordingly, the enterprise can compare itself with the industry average and its competitors in the industry in terms of WCM efficiency. In other words, it enables the enterprise to see that the efficiency of inventories, receivables and payables management is lower (higher) than the industry average and competitors in the industry.

In this framework, the results screen contains comments and suggestions regarding the determinants of WCM. Accordingly, first of all, the general financial performance of the enterprise regarding WCM is interpreted. However, according to the evaluations obtained from Table 3, comments on each WCM variable are included. If it has lower success than the industry (indicated in red), additional suggestions are presented. In this respect, an example of the evaluation regarding the CCC of the enterprise is given in Figure 8.

On this screen, comments, and suggestions regarding the CCC are presented. The evaluation regarding the CCC of the enterprise is obtained by the following rule.

IF "CCC of the enterprise <= Average CCC of the sub-sector AND CCC of the enterprise < Previous period CCC of the enterprise AND previous period CCC of the enterprise < CCC of the enterprise 2 periods ago" THEN

PRINT "Comment"

ELSE

PRINT "Comment"

FOREACH "Suggestion IN Suggestions"

PRINT "Suggestion"

In the process of developing the SME Emergency application, an expert system method based on artificial intelligence techniques was used. The developed SME Emergency application consists of three main modules. Accordingly, *the user interface* module contains the interface where the enterprises that will use the system can make membership and data entry transactions, the structure of the expert system application is developed in *the expert system module*, and the performance of the enterprise on WCM is presented to the user in *the evaluation module*.

The performance of enterprises with WCM is evaluated

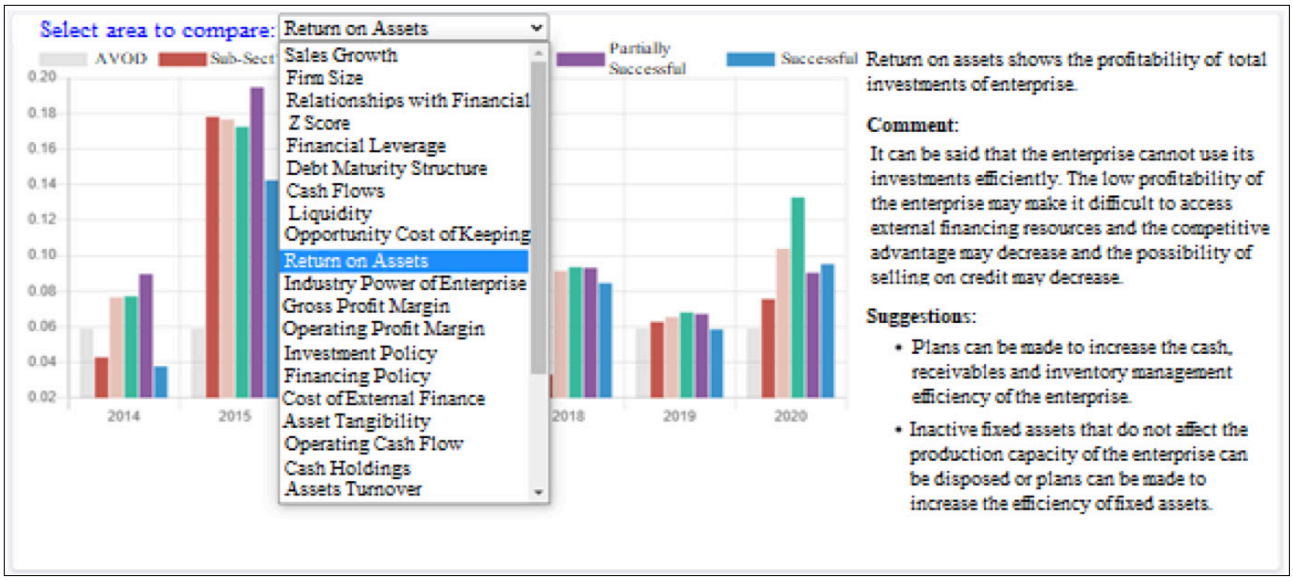

Figure 9. Evaluations of Sub-Input Variables

The results screen for WCM also includes comments and suggestions about the variables that may influence WCM. A sample display of this evaluation is presented in Figure 9. Accordingly, by selecting any variable on the chart, the financial position of the enterprise can be compared to previous years, the industry average, and competitors in the industry. Comments and suggestions regarding these variables can be accessed.

CONCLUSION

This study aims to provide expert support to increase the efficiency of SMEs in WCM. In this direction, an expert system application (SME Emergency) was developed to analyze the WCM of SMEs and offer comments and suggestions based on these analyses. The SME Emergency application was developed using the 9-year data (2012-2020 period) of 283 enterprises listed in the BIST All Shares.

in terms of 5 different performance outputs (AR, INV, AP, CCC, and NWC) using 38 different variables. The output layer shows whether the enterprises are successful or unsuccessful in terms of working capital efficiency through the created rule base. A classification (very unsuccessful, unsuccessful, partially successful, successful, and very successful) is made according to the extent to which they meet the relevant conditions. After determining the WCM performance of the enterprise, if there is an unsuccessful, it can be determined on the basis of the variable in which field the problem is, and suggestions can be offered in this direction.

SME Emergency application was developed as a web-based expert system. The SME Emergency web page contains information about the application and a login section for accessing the system. You can become an individual or corporate member of the system through the SME Emergency registration and login screen and access the data entry screen required for WCM with the

created user profiles. The values required for the WCM variables can be defined separately through the data entry screen. Then the values for the variables used for the WCM are automatically calculated by the system.

After calculating the values related to the WCM variables, the result screen of the SME Emergency application is accessed. In the result screen, first of all, the performance status of the enterprise in terms of WCM is presented. The general position of the enterprise in terms of WCM performance is interpreted. Then, the screen regarding the evaluation of the WCM variables according to the industry average in which the enterprise operates is accessed. The position of the enterprise according to the industry is shown through this screen. In the evaluation table in this section, stating the line related to the variable in red color enables the suggestions to be presented because the lower level of success helps to find out which variable is problematic.

In addition, on the result screen, the position of the enterprise in terms of WCM performance according to the industry in which it operates and the enterprises with a different financial position in the industry are presented graphically. In addition, this section includes comments and suggestions for each variable according to the determinants of WCM.

Finally, in the SME Emergency application result screen, there are evaluations of other variables that may be related to WCM. According to these variables, the success of the enterprise and the averages of the enterprises with different success situations in the industry in which the enterprise operates, and the industry average are shown comparatively over the years through graphs. In addition, suggestions are presented based on the result obtained from the evaluation table for each variable.

As a result, SME Emergency allows SMEs to see the performance of WCM compared with previous years and their competitors in the industry in which they operate. In this context, it is thought that the SME Emergency application will contribute to SMEs in terms of WCM compared to large-scale enterprises because SMEs cannot receive external consultancy services on financial management, which requires expertise due to the high cost. Likewise, this expert system application can be used by large-scale enterprises.

In this study, there are limitations, such as not being able to provide SME data and manually defining the comments and suggestions in the developed system in advance. Therefore, a more comprehensive and intelligent learning system can be developed by accessing a large number of SME (especially micro-scale) data. In addition to this, an expert system application can be designed for the evaluation of all operational performance of enterprises for enterprises of all sizes. In addition, artificial neural networks, machine learning, and fuzzy logic techniques can be used to develop a self-learning expert system and make more sensitive evaluations.

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Youth not in Employment, Education, or Training (NEET) in Turkey: A Regional Analysis

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ABSTRACT

The concept of youth not in education, training, and employment (NEET) is a relatively new popular concept. Its popularity is largely due to the fact that it takes into account different vulnerabilities such as unemployment and early school leaving, which are common among young people. The aim of this study is to examine the NEET youth in Turkey. In this context, the situation of young people in NEET status is examined according to gender, age, education level, marital status, and regional differences. For this purpose, the data pooled from the Household Labor Force Survey for the years 2014-2020 was used. In the study, first, NEET interpretations were made for Turkey using descriptive statistical tools, and then a logit analysis was performed to identify the determinants of NEET in Turkey. The findings reveal that demographic characteristics such as gender, marital status, age, education level, and region of residence are among the determinants of NEET.

Keywords: NEET, Youth Unemployment, Turkey, Labor market, Logistic Regression.

JEL Classification Codes: C21, J21, J64

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INTRODUCTION

Although NEET has only recently entered the global political agenda, reducing unemployment among youth and young adults has become an urgent problem for many countries. The rapid increase in the number of young people who are neither in education, employment nor training (NEET) has made the concept of NEET, which was initially used to define social status, embodied and become an important indicator. Young people are the most important representatives of the social and economic transformation of countries. If young people are ignored, their social benefits are jeopardized. The remarkable increase in the NEET rate in the population of countries requires an in-depth analysis of unemployment and inactivity, which are two important elements of the concept in question by policymakers. Especially countries with aging populations should produce policies to ensure the continuity of their social security systems, so that young people are more active in the workforce. However, in terms of countries, it is more difficult to fight youth unemployment than to fight general unemployment. Because the youth unemployment rate is higher than the general unemployment rate and requires consideration of factors different from those known during the struggle phase (Caroleo *et al.*, 2020). Therefore, there is a need for a comprehensive perspective beyond traditional tools, focusing specifically on youth unemployment.

As a result of the research conducted by the OECD (Organization for Economic Cooperation and Development), it is stated that Turkey is the second country with the highest NEET rate. According to the data of the Turkish Statistical Institute (TURKSTAT), the rate of young people neither in education nor in employment is 28.8%, which is well above the European average. In a country like Turkey with a high youth population, the fact that one out of every three young people has the status of NEET poses the risk of increasing instability in all areas of society. It is noteworthy that these rates are 40% for the young female population. Considering the fact that the NEET rate in the female youth population in Turkey is quite high compared to males, it makes it important to develop policies and research that take into account gender differences. When we look at the distribution of young people with NEET according to education levels in the data of TURKSTAT between 2014 and 2020, it is seen that the NEET rates of illiterate people are quite

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high compared to those who graduated from other education levels. On the other hand, higher education graduates in Turkey also have higher NEET rates than those who graduated from general high schools and vocational technical high schools. Young people who have just graduated from higher education in Turkey are taking longer to participate in employment. According to OECD data, 75% of higher education graduates in Turkey participate in employment within 4-5 years after graduation (2020, p. 84). The reason why vocational and technical high school graduates have higher NEET rates than general high school graduates is due to the higher transition rates of general high school graduates to higher education. Considering the transformative effect of digitalization and globalization in the job market, the main motivation of our study is to investigate the NEET status of the young population in Turkey.

Our research revealed four works that previously investigated the status of NEET in Turkey. The first study in Turkey was conducted by Kılıç (2014) and examined the demographic characteristics of young people with NEET using the relational research method. In the study, it was concluded that women are more likely to be NEET than men, the probability of being NEET increases with age, and low education increases the probability of being NEET. Later, Susanlı (2016) analyzed the determinants of youth NEET in Turkey with the probit model using the Household Labor Force survey data. In the study, it was concluded that those aged 20-24 are more likely to be NEET than those aged between 15-19, women are more likely to be men, married people are single and those living in rural areas are more likely to be NEET than those living in the city, and the probability of being NEET decreases as the education level of the individual increases. However, according to the model results estimated separately for men and women; It was found that while married women were more likely to be NEET than unmarried, unmarried men were more likely to be NEET than married people. In his study, Yüksel Arabacı (2020) examined the socio-demographic characteristics of NEET youth in the 15-29 age group and the reasons that prevent them from entering the labor market, using the TURKSTAT 2017 Household Labor Force Survey micro dataset. In the study, the differences between the socio-demographic characteristics of NEET youth were analyzed with the Pearson Chi-Square test and the status of NEET youth in the labor market was revealed by age and gender. In line with the report prepared by the ILO (2021), NEET young people affected by the COVID-19 pandemic in Turkey were collected and analyzed using qualitative and quantitative methods between 15-May-10 August 2020. Refugees were also discussed in the study. In this context, a survey was conducted with 1250 people, 250 of whom were refugees, and in-depth interviews were conducted with 11 experts from 11 different organizations. The findings reveal that most of the NEET youth are single, living with their families, healthy, and without any disability. However, it was concluded that most of the NEET youth are not involved in education due to economic conditions. It was found that the majority of NEET youth could not find a job after leaving full-time education, while those who found a job quit due to long working hours, irregular working conditions, and low wages. It has been revealed that education is a very important factor in working status, especially for women. It has been found that the COVID-19 pandemic has made NEET youth feel more important than ever to earn their own money and that the pandemic has acted as an incentive to seek a paid job.

We aimed to reveal the regional determinants of being a NEET in Turkey, which previous studies on Turkey neglected to take into account, and which constitute the main motivation of our study. In this context, we analyzed the status of youth in NEET status according to gender, marital status, age, education level, and region differences by using the pooled data from the Household Labor Force Survey data for the years 2014-2020 with logit model. Since young people who are not involved in education and employment are not a homogeneous group within themselves, differences such as age, gender, marital status, educational status, family history, health status, and the expectations and needs of the young people differentiate the measures to be taken. In this study, the 15-29 age group as well as the 15-24 and 25-29 age groups, which were not taken into account in previous studies, were also included in the analysis.[1] Models were estimated separately for each of the three age groups, and how the effects of socio-economic factors on age groups differed. In addition, ages entered the equations as a continuous variable. To our knowledge, regional differences, which were not taken into account in previous studies, were first time included in the analysis. In the study, first, NEET interpretations were made for Turkey using descriptive statistical tools, and then a binary logit analysis was performed to identify the determinants of NEET in Turkey. The findings reveal that demographic characteristics such as gender, marital status, age, education level, and region of residence are

[1] The age range of 15-24 is used by the TURKSTAT and the European Community Statistical Office (Eurostat) in statistics on youth. However, the age range of 15-29 can also be used for a more comprehensive analysis.

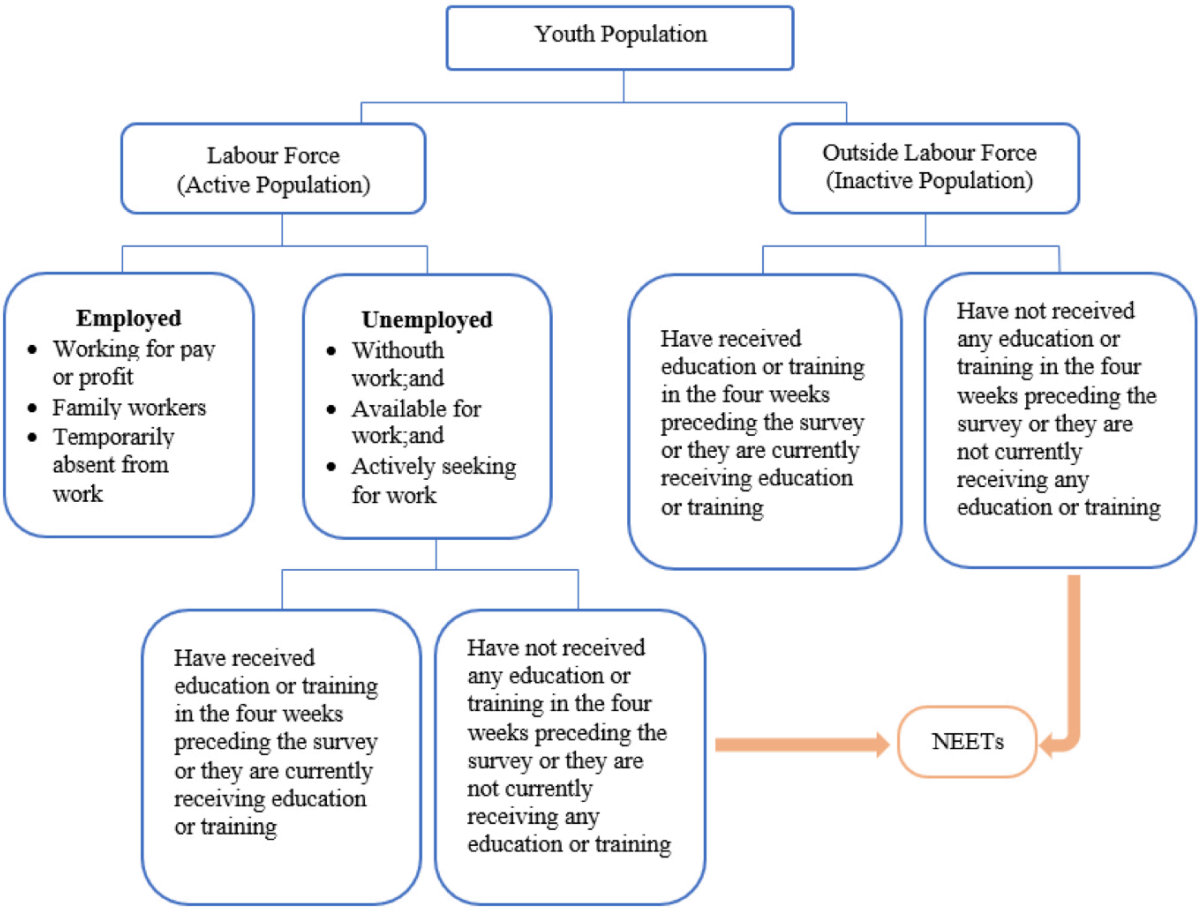

Figure 1. Composition of NEET Indicator
Source: Bardak et. al. (2015)

among the determinants of NEET. The subsections of the study are summarized as follows. The second part of the study is devoted to the definition of NEET and the third part is reviewed the literature on NEET. In the fourth chapter, the Status of NEET Youth in Turkey is analyzed and in the fifth chapter, the econometric method used is given. While the definition of the data set and dependent variable used in the study is given in the fourth section, the methodology, data set and descriptive statistics, and model results are included in the fifth section. In the last part, general evaluations of the determinants of NEET and the conclusions are made.

NEET DEFINITION

Labor market participation is often defined by indicators such as employment rates and unemployment rates, which provide information about those who already have a job or are actively looking for a job. These indicators are often criticized as they contain limited information about the young population. Since students are outside the workforce, basic unemployment and employment statistics do not take young people into account enough (Eurofund, 2011). While the integration of young people into society is traditionally considered as a transition from school life to business life, today it is accepted that such linear transitions are replaced by diversified and personalized transitions. Particularly in times of economic turbulence, modern youth transitions tend to be complex and long-lasting, with young people frequently entering and leaving the workforce. As many of these transitions cannot be revealed by traditional unemployment indicators, approaches that show the position of young people in the labor market have diminished. Therefore, in contemporary societies, it may be necessary to go beyond the approaches that divide the labor market into employed and unemployed in order to reveal labor market dependencies. As a matter of fact, researchers, national authorities, and international organizations have started to use alternative concepts and indicators for young people who are disconnected from both business and education life. In this framework, the concept of NEET has been increasingly used for young

people who are at high risk of the labor market and social exclusion (Mascherini *et al*., 2012).

NEET includes young people who are not integrated into employment or the education system and are not involved in any vocational training program. The assumption underlying this definition is that the NEET indicator also includes young people who are not in the labor market. NEET, which refers to young people who are not involved in employment, education, or training, is also an indicator of the social exclusion of young people and young adults. It should be noted that not all young people in the NEET category are at risk of social exclusion, and not all socially excluded youth are in the NEET category. However, NEET is a better indicator than youth unemployment statistics in revealing the risk of social exclusion (Bacher *et al*., 2014). Since the concept includes not only the unemployed young people who are included in the labor market but also those who are not included in the labor force and education system, it also reveals the idle youth workforce potential (Yüksel Arabacı, 2020). Unlike unemployment or employment, it has no international standard. Eurostat, ILO, and some other organizations have adopted the definition of the percentage of the population not employed and not engaged in education or training in a given age group and gender for the NEET rate (Elder, 2015).

LITERATURE REVIEW

Although there are many studies on unemployment in the literature, there are limited studies focusing on NEET youth. Most of the studies have focused on the socio-economic determinants and negative effects of being a NEET.

Genda (2007) analyzed the determinants of unemployed youth, whose numbers increased from 1990 to the early 2000s in Japan, using secondary data with a multinomial logit model. In the study, single, unemployed, and out-of-school individuals between the ages of 15-34 were discussed. The findings reveal that those with a low level of education, less work experience, and women are more likely to be NEET. Kelly and McGuinnes (2013) analyzed the determinants of NEET youth in Ireland and the impact of the recession on these determinants using the Quarterly National Household Survey data from 2006 and 2011 with a probit model. The model results showed that women were more likely to be NEET than men and those aged 20-24 were more likely to be NEET than those aged 15-19. It has been concluded that the level of education and the geographical region where one lives is also effective in being NEET. Kovrova and Lyon (2013) analyzed the NEETs of individuals between the ages of 15-24 for Brazil and Indonesia with a probit model, taking into account the cohort effect. In the study, it was concluded that women are more likely to be NEET than men, while the probability of women being NEET increases as age progresses, and men decrease. Rural residents in Brazil were less likely to be NEET than urban residents, while rural residents were more likely to be NEET than urban residents in Indonesia. In both countries, it has been observed that as the level of education increases, the probability of young people being NEET decreases. As the household size increases in Brazil, the probability of having NEET increases for men and decreases for women. However, as the number of children aged 0-4 increases, the probability of women being NEET increases, while the probability of men being NEET decreases. Increasing the number of children aged 5-14 years reduces the likelihood of NEET for both women and men. It was concluded that the probability of having NEET decreased in households with high-income levels. Ranzani and Rosati (2013) investigated the NEET problem in Mexico with a dynamic multinomial logit panel data model with random effects and investigated whether individuals' being NEETs is permanent and how being NEET affects their future employment status. The results show that being NEET is permanent in the short term, that women are more likely to be NEETs than men, that the probability of being NEET increases as the household size increases, that those who have children between the ages of 0-4 are more likely to be NEETs, that those who live in the city are more likely to be NEETs than those who live in rural areas. They showed that the probability of being NEET is higher for young people living in low-income households, the probability of being NEET increases as the level of education increases, and married people are more likely to be NEET than singles.

Bacher *et al*. (2014) examined the determinants of being a NEET and exiting the NEET status for Austria. The study investigates what the decisive factors are for a (successful) exit from a NEET situation. While the findings make it easier for women to exit the NEET status of living in the city and looking for a job; revealed that increasing age, having children aged 0-3, and leaving school at an early age make it more difficult to exit NEET status. It was concluded that early school leaving and health status were effective on the boys' exit from NEET status. It has been found that those with low education levels, those with low parental education

levels, those living in the city, and women who take care of children have a higher risk of NEET. Tamesberger and Bacher (2014) investigated the socio-structural features that characterize the NEET youth in Austria, the main reasons for being a NEET, and whether it is permanent to be in the NEET category. NEET youth were analyzed by dividing them into different subgroups due to heterogeneity. In the study, it was concluded that the risk of being permanently included in the NEET category of those living with their parents is lower than that of permanently leaving the NEET category. The findings showed that early school leavers and women have a high risk of permanent NEET status. However, it has been revealed that those who are NEET due to care responsibilities, personal or family problems, and illness have a higher risk of being permanent in the NEET category than those who are NEET for other reasons. In general, it has been observed that women, those living in the city, those who left school at an early age, those who have children, and those with parents with a low level of education are more likely to be in the NEET category. Feng *et al*. (2015) examined the consequences and risk factors of being a NEET in Scotland using the logit model. In the study, results were obtained for both male and female individuals, with low education levels and those with physical health problems increase the probability of NEET. However, it was found that the absence of a working adult in the household and having many siblings also increased the probability of NEET. In addition, it has been revealed that the risk of being NEET increases among women who do housework, and the risk of being NEET differs according to the geographical regions where they live. Işık (2016) examined youth unemployment and NEET issues in Turkey. In the study, workforce age, considering data on gender and distribution as education, unemployment and stagnation for the young labor issues have tried to put forward in a whole. It was revealed that Turkey has the highest NEET rate among OECD countries due to gender discrimination. In addition, the necessity of an effective education system and a structure that supports the education-employment relationship has been emphasized. Dama (2017) examined the general situation of NEETs in Turkey and Europe. The study investigates the demographic characteristics of NEETs in Turkey. It has been revealed that the risk of being NEET increases among women and young people who drop out of school. Therefore, the importance of policy making for this disadvantaged group was emphasized. Pattinasarany (2019) analyzed the factors affecting an individual's NEET using a logit model in his study to reveal how common NEET is among young people in Indonesia. In the study, it was found that women are more likely to be NEET than men, the risk of being NEET increases with age, the risk of being NEET decreases as the education level of the individual increases, the probability of being NEET in urban residents decreases compared to those living in rural areas, married men are less likely to be NEET than single men. It has been found that married women have a higher risk of being NEET than single women. It has been observed that the presence of individuals younger than 5 years and/or older than 60 years in the household decreases the probability of being NEET for men, while the risk of being NEET increases for women, and the probability of being NEET decreases as the household income increases. Abayasekara and Gunasekara (2020) analyzed the determinants of NEET and the subgroups that make up NEET individuals for Sri Lanka using binomial logit and multinomial logit models. In the study, it was concluded that those between the ages of 15-19 are less likely to be NEET than those between the ages of 20-24, women are more likely to be NEET than men, and those who have never been married are more likely to be NEET than those who have been married before or are currently married. It has been found that those in the higher income group are less likely to be NEET than those in the lowest household income group. It has been concluded that those with children under the age of 5 are more likely to be NEET and the area of residence has an effect on the probability of being NEET. Caroleo *et al*. (2020) analyzed the main individual and macroeconomic determinants of NEET for European countries with different specifications of multilevel models with binary outcomes of logit models. The model results revealed that married women, those with at least one child, or those who are permanently disabled are more likely to be NEET, the risk of being NEET decreases as the education level of the individual increases, and the probability of being NEET is decreased if at least one of the parents is university. Bingöl (2020) investigated theimpact of macroeconomic indicators on NEET population in Brazil, India, Indonesia, South Africa, and Turkey accepted as Fragile Five countries and Russia 2005-2018 period by using the panel data analysis method. Gross Domestic Product Per Capita, Inflation Rate, Adjusted savings for education expenditure, Foreign Direct Investment, HDI index data were used for explaining the NEET. According to findings, increase in HDI and FDI respectively give rise an increase on NEET, increase in GDP, and S resulted in a decrease on NEET.

STATUS OF NEET YOUTH IN TURKEY

Although there is an increase in the rate of NEET youth globally, this rate differs from country to country. Among OECD countries, Turkey is among the countries with the highest NEET youth rate.

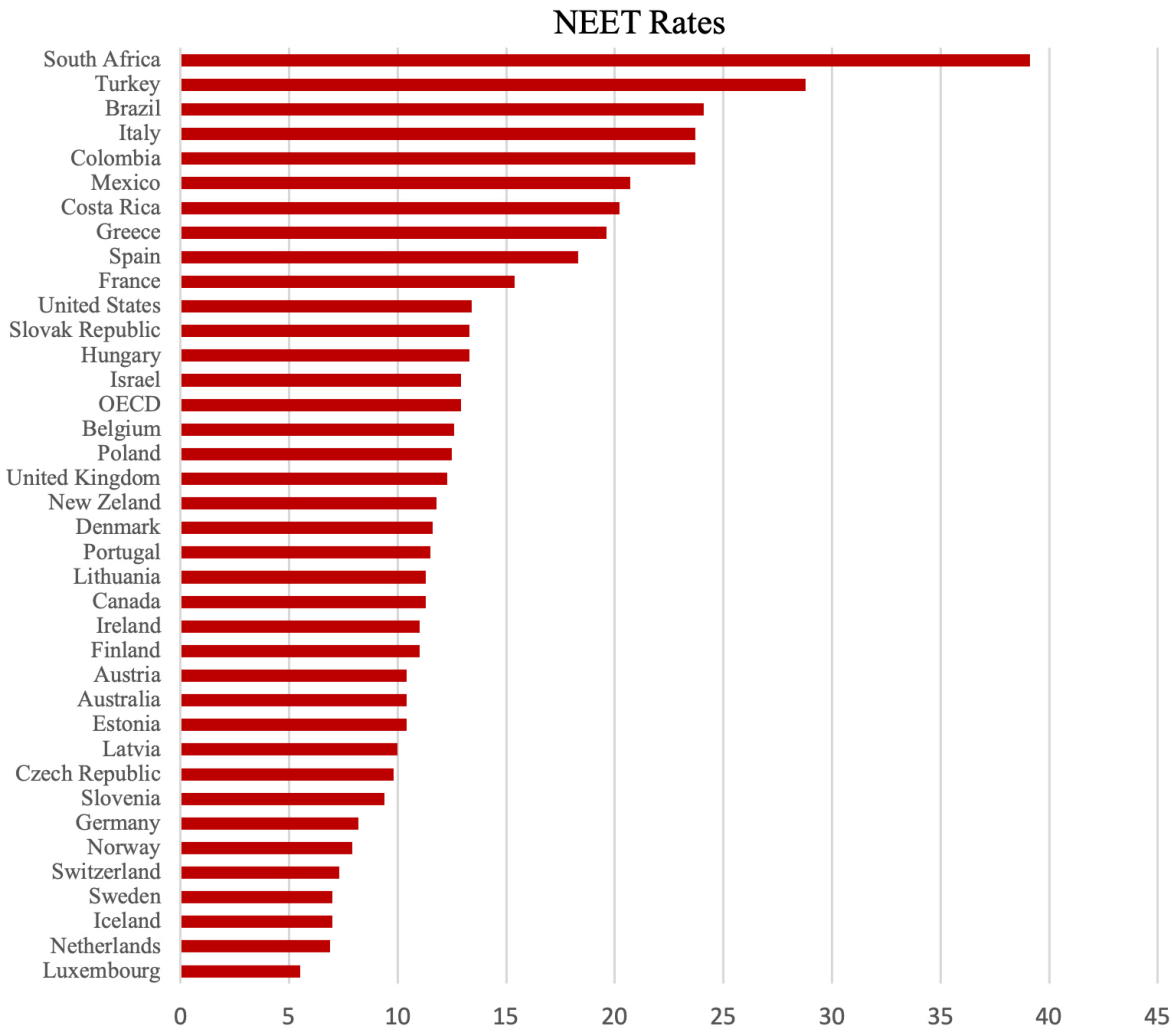

Figure 2. NEET Rates for the 15-29 Age Group in OECD Countries in 2019
Source: OECD, 2022

Table 1. NEET Rate and Labor Market Status by Years for the 15-29 Age Group*

	15-29 Age Group				
Year	Not Included in the Labor force	Unemployed	NEETs	Employed	In Education/Training
2014	0.2509	0.0540	0.3048	0.3971	0.3917
2015	0.2369	0.0533	0.2902	0.4035	0.4103
2016	0.2310	0.0568	0.2878	0.4005	0.4219
2017	0.2307	0.0610	0.2917	0.3994	0.4192
2018	0.2389	0.0663	0.3052	0.3978	0.4052
2019	0.2367	0.0844	0.3211	0.3840	0.3895
2020	0.2581	0.0753	0.3334	0.3427	0.3895

* Calculations were made by the authors.

When the graph in Figure 2 is examined, the country with the highest NEET youth rate among OECD countries after South Africa is Turkey, which is well above the OECD average. When the NEET ratios by gender in the OECD countries in Figure 3 are examined, it is seen that the female NEET ratio is higher than the male NEET ratio in all countries except Sweden, Switzerland, Iceland, Canada, Latvia, and Lithuania. Turkey is the country with the highest female NEET rate after South Africa. Looking at the average of all OECD countries, the male NEET rate is 10.8% and the female NEET rate is 15.5%. In Turkey, while the male NEET rate is 17.9%, the female NEET rate is 40%.

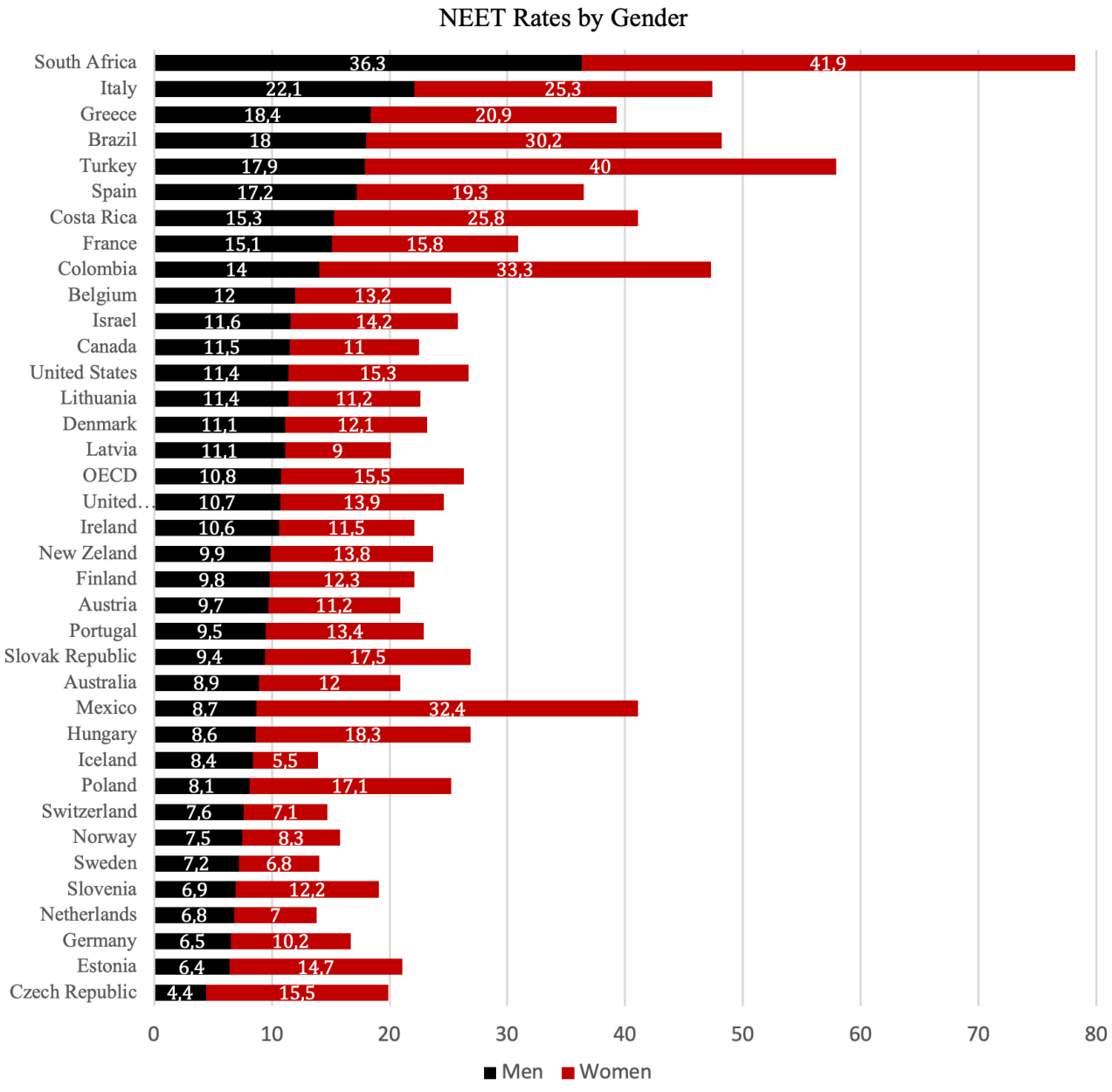

Figure 3. NEET Rates by Gender for the 15-29 Age Group in OECD Countries in 2019
Source: OECD, 2022

Table 2. NEET Rate and Labor Market Status by Years for the 15-24 Age Group*

	15-24 Age Group				
Year	Not Included in the Labor force	Unemployed	NEETs	Employed	In Education/Training
2014	0.2266	0.0473	0.2740	0.3194	0.5071
2015	0.2085	0.0465	0.2550	0.3266	0.5318
2016	0.2031	0.0475	0.2506	0.3226	0.5463
2017	0.2078	0.0534	0.2611	0.3192	0.5362
2018	0.2194	0.0584	0.2778	0.3216	0.5137
2019	0.2162	0.0751	0.2913	0.3071	0.5023
2020	0.2341	0.0657	0.2998	0.2644	0.5050

* Calculations were made by the authors.

Table 3. NEET Rate and Labor Market Status by Years for the 25-29 Age Group*

	25-29 Age Group				
Year	Not Included in the Labor force	Unemployed	NEETs	Employed	In Education/Training
2014	0.3062	0.0690	0.3753	0.5745	0.1280
2015	0.3020	0.0689	0.3709	0.5800	0.1313
2016	0.2944	0.0778	0.3723	0.5776	0.1392
2017	0.2839	0.0786	0.3625	0.5850	0.1483
2018	0.2842	0.0847	0.3690	0.5752	0.1525
2019	0.2827	0.1052	0.3879	0.5568	0.1360
2020	0.3122	0.0970	0.4093	0.5193	0.1293

* Calculations were made by the authors.

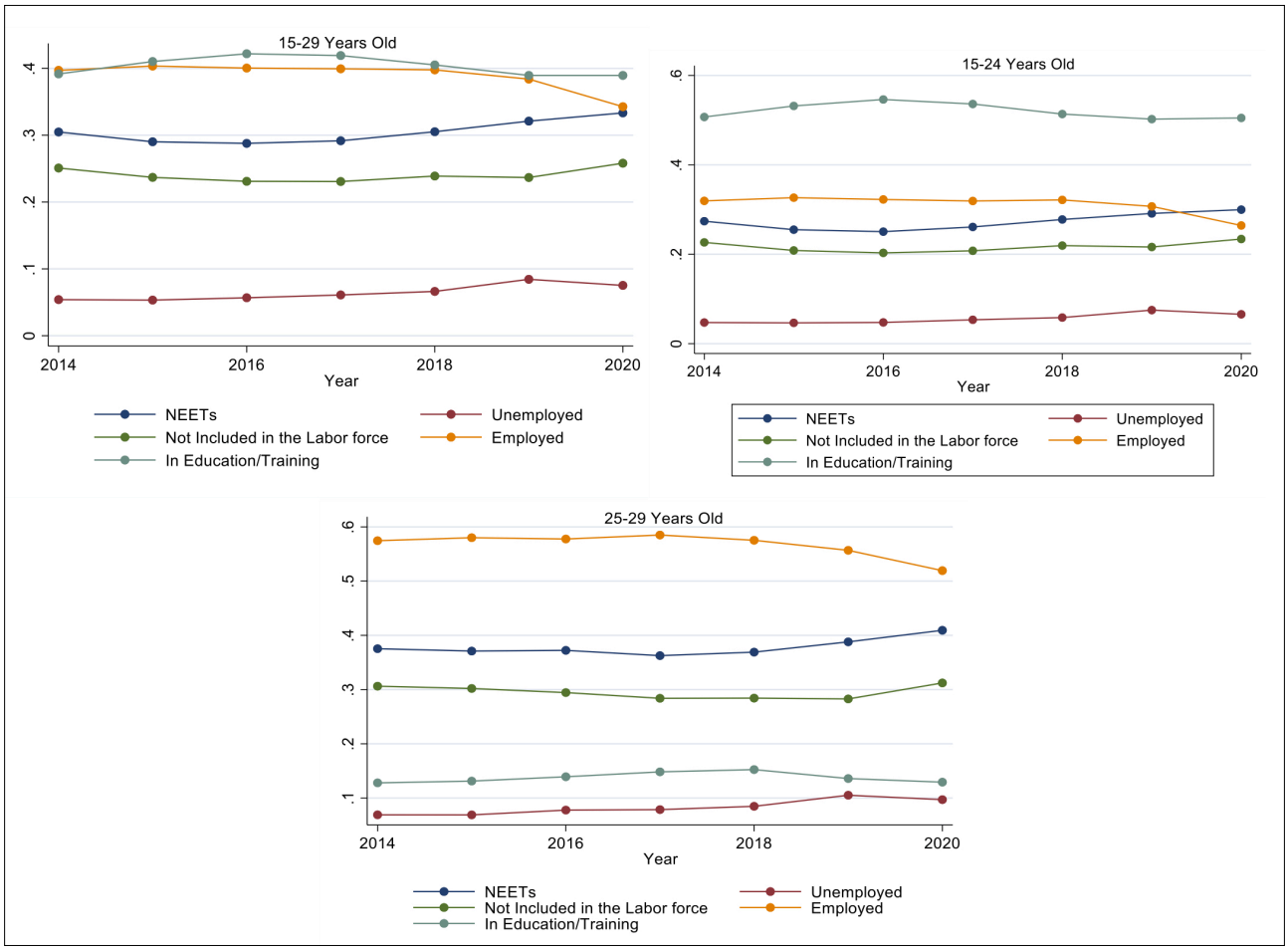

Figure 4. NEET Rate and Labor Market Status by Years for Age Groups

In particular, it is seen that the female NEET rate is much higher than the OECD average.

Table 1, Table 2, and Table 3 below were created according to the age groups of 15-29, 15-24, and 25-29 to reveal the NEET rate and the labor market situation in Turkey between the years 2014-2020.

When Table 1, Table 2, and Table 3 above are examined, it is seen that the NEET rate in all age groups has increased over the years. From 2014 to 2020, the NEET rate increased from 30.48% to 33.34% for the 15-29 age groups, from 27.4% to 29.98% for the 15-24 age groups, and from 37.53% to 40.93% for the 25-29 age groups. The reason why the NEET rate is quite high in the 25-29

age group compared to the 15-24 age group is that most of the individuals in this age group have ended their education life. When the distribution of NEETs in all age groups is analyzed, it is seen that the rate of those who are not in the labor force is much higher than the rate of those who are unemployed. The age group with the highest rate of unemployment among those with NEET is the 25-29 age group. The proportion of married people in the 25-29 age group is higher than in other age groups. It can be said that this rate is higher, especially since married men actively seek work to earn a living for the household.

Looking at Figure 4, it is seen that the NEET rate tends to increase in all age groups according to years, and the age group with the highest NEET rate is the 25-29 age group. When the rate of those in employment and education is examined, the age group with the highest rate of employment is the 25-29 age group, while the age group with the highest rate of education is the 15-24 age group. When we look at the ratio of those in education between 2014 and 2020 for all age groups, it is seen that there is not much change in proportion, but there is a remarkable decrease in the ratio of those in employment for all age groups. Therefore, it can be said that the main reason for the increase in the NEET rate is the decrease in the employment rate.

EMPIRICAL APPLICATION

Methodology

The models used in cases where the dependent variable is a qualitative variable that takes two values are called binary outcome models. One of the most used models among these models is the logit model. Since it is assumed that dependent variable *Y* takes only two values, 0 and 1, in binary logistic regression, it follows a Bernoulli distribution (Yılmaz and Çelik, 2021).

The logit model uses the logistic cumulative distribution function. Linear regression model showing the relationship of a binary outcome with a continuous variable

$$P_i = E(Y=1 \mid X_i) = \beta_0 + \beta_1 X_i \tag{5.1}$$

In the above model, X_i represents the continuous variable, P_i is the probability that event of interest occurs. The probability of the event occurring is shown as follows:

$$P_i = E(Y_i=1 \mid X_i) = \frac{1}{1+e^{-(\beta_0+\beta_1 X_i)}} \tag{5.2}$$

Substituting in equation (5.2) for $Z_i = \beta_0 + \beta_1 X_i$ the following equation (5.3) is obtained:

$$P_i = \frac{e^{Z_i}}{1+e^{Z_i}} \tag{5.3}$$

Equation (5.3), which shows the probability of an event occurring, is known as the logistic distribution function. The ratio of the probability of an event occurring to the probability of not occurring is obtained as:

$$\frac{P_i}{(1-P_i)} = \frac{1+e^{Z_i}}{1+e^{-Z_i}} = e^{Z_i} \tag{5.4}$$

By taking the logarithm of equation (5.4),

$$L_i = Ln\left(\frac{P_i}{(1-P_i)}\right) = Z_i = \beta_0 + \beta_1 X_i \tag{5.5}$$

the logit model in equation (5.5) is obtained. Here L_i is called logit. In the logit model, while L_i is linear with respect to X, the probabilities themselves are not linear, and while the probabilities are limited between 0 and 1, there is no limitation in logit (Greene, 2018).

Data Set

In the study, pooled data from the Household Labor Force Survey for the years 2014-2020 were used. One of the problems that most affect the socio-economic development of Turkey is the youth who are not in employment or education. The aim of this study is to determine the profile of young people between the ages of 15-29 who are neither in education nor in employment in Turkey with socio-economic factors. Of the 752930 young people in the sample, 229950 (30.54%) are neither in education nor in employment. Factors affecting an individual's NEET were analyzed on an individual basis using a binary logit model. The age criterion is important in practice. United Nations (UN), World Bank (WB), and International Labor Organization (ILO) accept the age range of 15-24 for youth in international data and statistics. However, the age range accepted for youth may also vary according to the purpose of the measurement. As a matter of fact, the age group of 25-29 is also used in many international studies, since the education period exceeds the age of 24. Based on these statements, 15-24 and 25-29 age groups were also included in the study. The dependent variable is a dummy variable that takes a value of 1 if the young individual is NEET and 0 otherwise. However, in the Labor Force survey, NEET individuals

Table 4. Descriptive Statistics by Age Categories

	15-29 Years Old		15-24 Years Old		25-29 Years Old	
Variable	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
The Dependent Variable						
NEET	0.3054	0.4605	0.2731	0.4455	0.3790	0.4851
Age						
15 Years Old	0.0847	0.2784	0.1217	0.3270		
16 Years Old	0.0855	0.2797	0.1230	0.3284		
17 Years Old	0.0860	0.2804	0.1236	0.3292		
18 Years Old	0.0780	0.2682	0.1121	0.3155		
19 Years Old	0.0655	0.2475	0.0943	0.2922		
20 Years Old	0.0553	0.2286	0.0795	0.2706		
21 Years Old	0.0572	0.2323	0.0823	0.2749		
22 Years Old	0.0602	0.2380	0.0866	0.2813		
23 Years Old	0.061	0.2396	0.0879	0.2832		
24 Years Old	0.0615	0.2402	0.0884	0.2839		
25 Years Old	0.0610	0.2394			0.2005	0.4004
26 Years Old	0.0605	0.2385			0.1989	0.3991
27 Years Old	0.0606	0.2386			0.1990	0.3993
28 Years Old	0.0610	0.2393			0.2004	0.4003
29 Years Old	0.0612	0.2397			0.2010	0.4007
Sex						
Male	0.4975	0.4999	0.5018	0.4999	0.4877	0.4998
Female	0.5024	0.4999	0.4981	0.4999	0.5122	0.4998
Marital Status						
Single	0.7425	0.4372	0.8800	0.3249	0.4283	0.4948
Married	0.2574	0.4372	0.1199	0.3249	0.5716	0.4948
Education						
Illiterate	0.0753	0.2639	0.0619	0.2410	0.1058	0.3076
Primary School	0.0297	0.1697	0.0172	0.1302	0.0581	0.2339
Secondary School	0.4777	0.4995	0.5640	0.4958	0.2805	0.4492
General High School	0.1400	0.3470	0.1444	0.3515	0.1297	0.3360
Vocational High School	0.1186	0.3233	0.1242	0.3298	0.1058	0.3076
Academy-University	0.1522	0.3593	0.0870	0.2818	0.3013	0.4588
Master-PhD	0.0062	0.0790	0.0009	0.0302	0.0185	0.1348
Region						
Istanbul	0.0937	0.2914	0.0882	0.2836	0.1062	0.3082
Western Marmara	0.0500	0.2180	0.0471	0.2118	0.0567	0.2314
Eastern Marmara	0.0780	0.2682	0.0748	0.2631	0.0854	0.2795
Western Anatolia	0.1077	0.3100	0.1056	0.3073	0.1126	0.3162
Central Anatolia	0.0644	0.2456	0.0659	0.2482	0.0611	0.2395
Centraleastern Anatolia	0.0889	0.2846	0.0925	0.2897	0.0807	0.2724
Northeastern Anatolia	0.0709	0.2567	0.0741	0.2620	0.0636	0.2441
Southeastern Anatolia	0.1288	0.3350	0.1357	0.3425	0.1130	0.3166
Western Black Sea	0.0712	0.2572	0.0714	0.2575	0.0707	0.2564
Eastern Black Sea	0.0378	0.1907	0.0380	0.1912	0.0373	0.1896
Aegean	0.0996	0.2995	0.0967	0.2956	0.1063	0.3082
Mediterranean	0.1083	0.3108	0.1095	0.3123	0.1058	0.3075
Year						
2014	0.1511	0.3582	0.1511	0.3582	0.1512	0.3582
2015	0.1466	0.3537	0.1469	0.3540	0.1461	0.3532
2016	0.1387	0.3457	0.1385	0.3455	0.1392	0.3462
2017	0.1359	0.3427	0.1364	0.3432	0.1346	0.3413
2018	0.1326	0.3392	0.1334	0.3400	0.1309	0.3373
2019	0.1296	0.3359	0.1290	0.3352	0.1311	0.3375
2020	0.1650	0.3712	0.1643	0.3706	0.1666	0.3726

were not given a single data collectively. For this reason, the classification of NEET individuals was obtained based on the survey questions: "Did you attend a formal education institution in the last 4 weeks ending with the reference week? (including open education)" and those who are unemployed and not included in the labor force when asked about the individual's labor force status. In the study, NEET individuals were formed by considering those who were not included in the workforce and did not continue their education, and those who were unemployed and did not continue their education.

Descriptive Statistics

Before the evaluation of the model results, the descriptive statistics of the variables included in the analysis are given in Table 4.

While the NEET rate in the 15-29 age group is 30.54%, this rate is 27.31% in the 15-24 age group and 37.90% in the 25-29 age group. The reason why the NEET rate in the 25-29 age group is higher than in other age groups is that the rate of individuals who do not take part in education is higher. 51.22% of those aged 25-29, 50.24% of those aged 15-29, and 49.81% of those aged 15-24 are women. When the marital status is examined, the rate of single people is the highest in the 15-24 age group with 88%, while this rate is 74.25% in the 15-29 age group and 42.83% in the 25-29 age group. Among the 15-29 age group, 47.77% are Secondary Schools, 25.86% are General High School/Vocational High School and 15.22% are Academy/University graduates. Of the 15-24 age group, 56.4% are in Secondary School, 26.86% are General High School/Vocational High School and 8.7% are Academy/University graduates. 30.13% of the individuals in the 25-29 age group are graduates of Academy/University, 28.05% are Secondary School and 23.55% are General High School/Vocational High School, graduates. While 12.88% of those in the 15-29 age group live in Southeastern Anatolia, 10.83% in the Mediterranean, 10.77% in Western Anatolia, and 9.96% in the Aegean region, 3.78% live in the Eastern Black Sea region, and 5% in the Western Marmara region. While 13.57% of the 15-24 age group live in Southeastern Anatolia, 10.95% in the Mediterranean, 10.56% in Western Anatolia, 9.67% in the Aegean region, 3.8% in the Eastern Black Sea region, and 4.71% in the Western Marmara region. 11.30% of those in the 25-29 age group live in Southeastern Anatolia, 11.26% in Western Anatolia, 10.63% in the Aegean, and 10.58% in the Mediterranean region. The least inhabited regions are the Eastern Black Sea Region with 3.73% and the Western Marmara region with 5.67%.

LOGIT Model Estimation

In order to reveal the characteristics of the youth in the NEET status in Turkey, the logit model was estimated for the 15-29, 15-24, and 25-29 age groups and the results are given in Table 5.

In all models, the reference class is male, single, graduate/doctorate graduate, living in Istanbul, and 2014. 29 years old in the model estimated for the 15-29 age group, 24 years in the model estimated for the 15-24 age group, and 29 years old in the model estimated for the 25-29 age group were taken as the reference class.

When the results in Table 5 are examined, it is concluded that women are more likely to be NEET than men in all three models, which supports the literature (Genda, 2007; Kelly & McGuinnes, 2013, Susanli, 2016). Looking at the model result obtained especially for the 25-29 age group, it is seen that the probability of being NEET is 17.5% more for women than for men. When the effect of marital status on individuals' being NEET is examined, the probability of married people being NEET is 13.94% less in the model estimated for the 15-29 age group, 5.57% in the model estimated for the 15-24 age group, and 23.95% in the model estimated for the 25-29 age group (Abayasekara and Gunasekara, 2020). In all three models, it is seen that being married and female increases the risk of being NEET.

Looking at the effect of age on an individual's NEET, it is seen that 15, 16, and 17-year-olds are less likely to be NEET than 29-year-olds and 24-year-olds in the models estimated for the 15-29 and 15-24 age groups, respectively. It can be argued that this result is due to the fact that most individuals under the age of 18 continue their education. Looking at individuals older than 17 years of age, it is seen that they are more likely to have NEET than those aged 29, but the probability tends to decrease with age. In the model estimated for the 25-29 age group, it was concluded that the probability of being NEET decreased as the age increased.

When the effect of an individual's education level on being NEET is examined, it is seen that the probability of being NEET is increased for those with a low education level, which supports the literature in the models estimated for the 15-29 and 25-29 age groups (Kovrova & Lyon, 2013; Bacher *et al*., 2014; Susanli, 2016, Caroleo *et al*., 2020). Looking at the model estimated for the 15-24 age group, the risk of being NEET is lower for primary, secondary, high school, and college/university graduates than for master/PhD graduates. This result is in line

Table 5. Determinants of NEET Status, Logit Model Estimates

The Dependent Variable (NEET)	15-29 Years Old		15-24 Years Old		25-29 Years Old	
Variable	Coefficient (Std. Error)	Marginal Effect	Coefficient (Std. Error)	Marginal Effect	Coefficient (Std. Error)	Marginal Effect
Female	0.6095*** (0.0068)	0.1176	0.5512*** (0.0077)	0.0964	0.7852*** (0.0153)	0.1750
Married	-0.7959*** (0.0141)	-0.1394	-0.3429*** (0.0249)	-0.0557	-1.0571*** (0.0181)	-0.2395
Married Women	2.2072*** (0.0156)	0.4929	2.1638*** (0.0273)	0.4825	2.0612*** (0.0226)	0.4630
15 Years Old	-1.2845*** (0.0203)	-0.1851	-1.1731*** (0.0206)	-0.1576		
16 Years Old	-1.0203*** (0.0194)	-0.1569	-0.8946*** (0.0194)	-0.1282		
17 Years Old	-0.6142*** (0.0181)	-0.1041	-0.5013*** (0.0180)	-0.0786		
18 Years Old	0.5981*** (0.0162)	0.1283	0.6158*** (0.0157)	0.1211		
19 Years Old	0.6170*** (0.0165)	0.1330	0.5670*** (0.0160)	0.1111		
20 Years Old	0.3368*** (0.0170)	0.0696	0.2180*** (0.0165)	0.0400		
21 Years Old	0.2515*** (0.0169)	0.0511	0.0825*** (0.0162)	0.0147		
22 Years Old	0.2910*** (0.0165)	0.0596	0.0604*** (0.0158)	0.0107		
23 Years Old	0.3420*** (0.0163)	0.0707	0.0475*** (0.0155)	0.0084		
24 Years Old	0.3513*** (0.0162)	0.0727				
25 Years Old	0.2747*** (0.0163)	0.0561			0.1637*** (0.0163)	0.0374
26 Years Old	0.1997*** (0.0163)	0.0402			0.1165*** (0.0163)	0.0265
27 Years Old	0.1293*** (0.0164)	0.0257			0.0750*** (0.0162)	0.0170
28 Years Old	0.0901*** (0.0163)	0.0177			0.0576*** (0.0162)	0.0130
Illiterate	1.9095*** (0.0400)	0.4397	0.5102*** (0.0959)	0.0997	2.0182*** (0.0453)	0.4636
Primary School	1.2009*** (0.0417)	0.2773	-0.2858*** (0.0983)	-0.0462	1.4498*** (0.0472)	0.3473
Secondary School	0.3121*** (0.0389)	0.0605	-1.4324*** (0.0951)	-0.2606	1.1474*** (0.0432)	0.2694
General High School	0.5710*** (0.0392)	0.1204	-0.8606*** (0.0951)	-0.1258	0.8262*** (0.0443)	0.1981
Vocational High School	0.5896*** (0.0393)	0.1252	-0.8174*** (0.0952)	-0.1193	0.7521*** (0.0450)	0.1804
Academy/University	0.5542*** (0.0389)	0.1163	-0.3698*** (0.0950)	-0.0592	0.4966*** (0.0430)	0.1148
Western Marmara	0.0809*** (0.0166)	0.0159	0.1236*** (0.0215)	0.0222	-0.0069 (0.0266)	-0.0015
Eastern Marmara	0.2322*** (0.0143)	0.0470	0.2538*** (0.0184)	0.0470	0.1877*** (0.0233)	0.0433
Western Anatolia	0.1950*** (0.0132)	0.0390	0.2000*** (0.0169)	0.0364	0.1838*** (0.0217)	0.0423
Central Anatolia	0.3752*** (0.0149)	0.0779	0.4138*** (0.0187)	0.0793	0.2893*** (0.0255)	0.0675
Centraleastern Anatolia	0.7344*** (0.0135)	0.1599	0.8675*** (0.0168)	0.1785	0.5253*** (0.0238)	0.1249
Northeastern Anatolia	0.4018*** (0.0146)	0.0837	0.5245*** (0.0181)	0.1025	0.1877*** (0.0257)	0.0433
Southeastern Anatolia	0.9965*** (0.0125)	0.2204	1.1241*** (0.0156)	0.2350	0.7944*** (0.0219)	0.1907
Western Black Sea	0.1814*** (0.0148)	0.0363	0.1917*** (0.0188)	0.0350	0.1182*** (0.0246)	0.0270
Eastern Black Sea	0.4437*** (0.0175)	0.0937	0.5037*** (0.0219)	0.0989	0.2955*** (0.0298)	0.0691
Aegean	0.1324*** (0.0136)	0.0262	0.1762*** (0.0174)	0.0320	0.0411* (0.0221)	0.0093
Mediterranean	0.4497*** (0.0130)	0.0938	0.4904*** (0.0166)	0.0945	0.3758*** (0.0218)	0.0881
2015	-0.0544*** (0.0107)	-0.0104	-0.0947*** (0.0133)	-0.0162	0.0058 (0.0187)	0.0013
2016	-0.0318*** (0.0109)	-0.0061	-0.0983*** (0.0135)	-0.0168	0.0539*** (0.0190)	0.0122
2017	-0.0016 (0.0109)	-0.0003	-0.0424*** (0.0134)	-0.0073	0.0178 (0.0193)	0.0040
2018	0.0768*** (0.0109)	0.0150	0.0577*** (0.0134)	0.0102	0.0547*** (0.0194)	0.0124
2019	0.1899*** (0.0109)	0.0379	0.1630*** (0.0134)	0.0294	0.1937*** (0.0193)	0.0446
2020	0.3122*** (0.0102)	0.0633	0.2605*** (0.0125)	0.0477	0.3718*** (0.0182)	0.0867
Constant	-2.5060*** (0.0414)	-	-0.9522*** (0.0957)	-	-2.5822*** (0.0481)	

*** Significant at %1 level; ** %5 level; *%10 level.

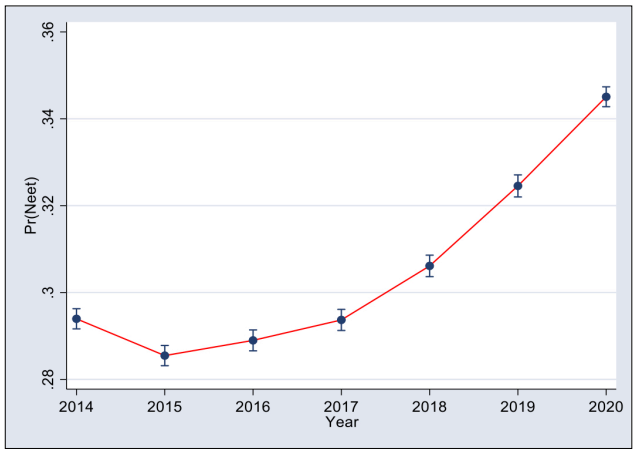

Figure 5. Marginal Probabilities by Years

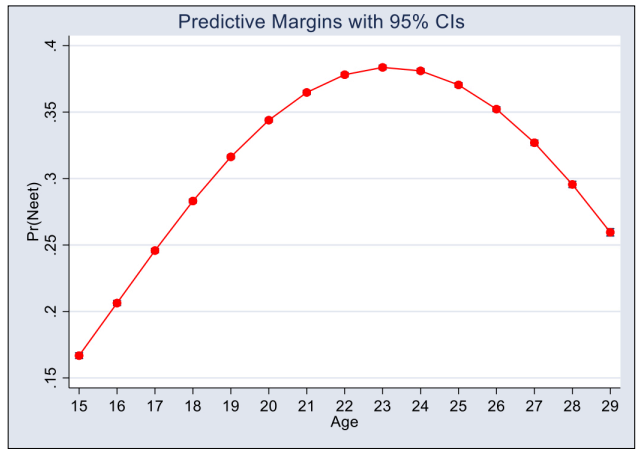

Figure 6. Marginal Probabilities by Age

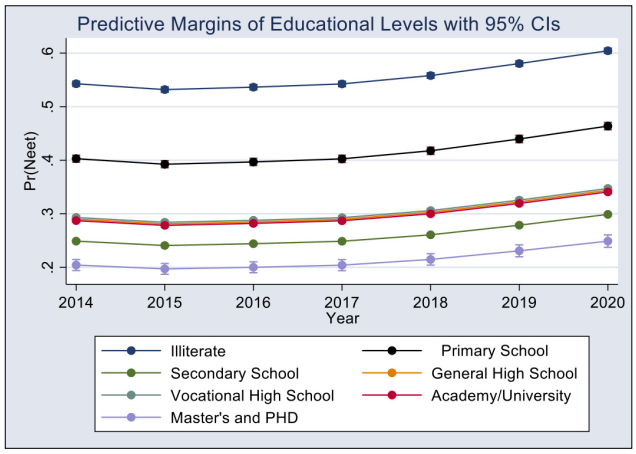

Figure 7. Marginal Probabilities by Education Level

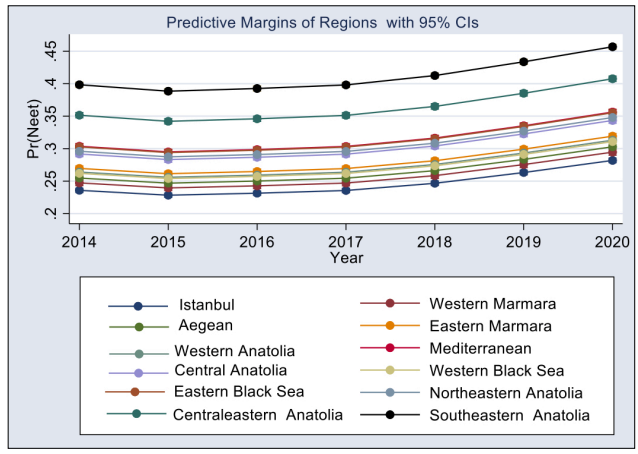

Figure 8. Marginal Probabilities by Region

with the expectation when considering the job search period of a master/PhD graduate who is not involved in education.

When the living regions are examined, all other coefficients are statistically significant except for the coefficient obtained for the Western Marmara region in the model estimated for the 25-29 age group, and in all three models, those living in areas outside of Istanbul are more likely to be NEET than those living in Istanbul. The regions with the highest probability of being NEET are Southeastern Anatolia, Centraleastern Anatolia, Mediterranean, Eastern Black Sea, and Central Anatolia, respectively. The low rate of continuing education in these regions and the increasing unemployment rate in recent years, unfortunately, increase the risk of being NEET.

When the years are examined in the models estimated for age groups, all other coefficients are statistically significant except for the coefficient for 2017 in the model estimated for the 15-29 age group, and for the years 2015 and 2017 in the model estimated for the 25-29 age groups. Looking at the results in general, it is seen that the risk of being NEET has increased in all age groups from 2014 to 2020 in Turkey, in parallel with the recent increase in the NEET rate globally.

Analysis of Marginal Effects

After model estimation and marginal effect interpretation, we can also show the marginal probabilities results of NEET with the graphs below:

Looking at Figure 5, it is seen that the probability of being NEET increases from 2014 to 2020. When Figure 6 is examined, it is concluded that as the age increases, the probability of being NEET first increases and then decreases, and the probability of being NEET is at its peak around the age of 23. Considering the probability of being NEET in terms of education level over the years in Figure 7, it is seen that the probability of being NEET is higher for those who have not completed school and who are primary school graduates. When we look at the probability of being NEET according to the region in the years in Figure 8, it is seen that the probability of being NEET increases towards 2020 in all regions. This could ultimately be the effect of the Covid-19 pandemic. It is

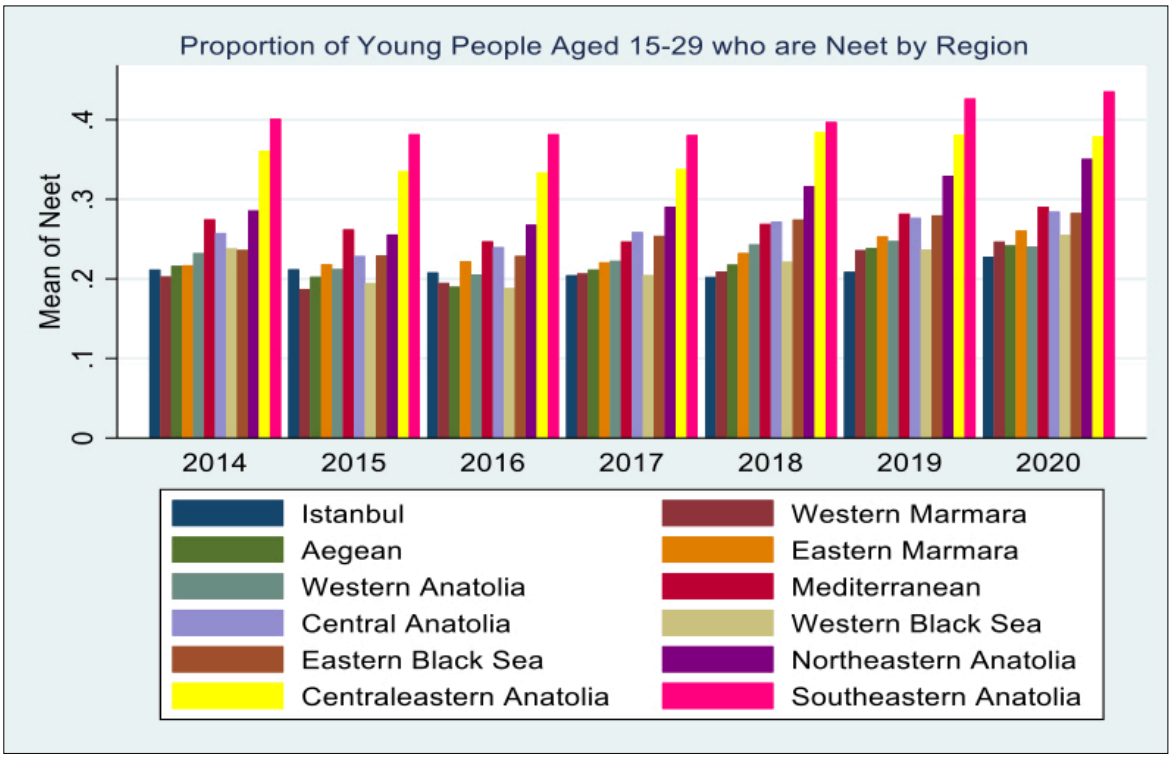

Figure 9. Neet Rates for 15-29 between 2014-2020
Note: Calculations are made by authors from the 2014-2020 Household Labor Force Survey Data

seen that the region with the highest probability of being NEET is the South East Anatolia region. When we focus on the highest neet rates of broadly defined youth between 2014 and 2020 in the graph, we come across three regions see Figure 9. These are Southeastern Anatolia, Centraleastern Anatolia, and Northeastern Anatolia regions, respectively.

In order to explain these regional differences regarding the NEET, the per capita gross domestic product values of the three regions are given (see Table 6). It is seen that the NEET averages (see Figure 9) obtained by us from the microdata and the macro indicators in Table 6 below support each other. It is inevitable that there will be socio-economic imbalances between the regions with the lowest per capita income and other regions. In other words, the differences in agriculture, industry, trade, service, communication, transportation, health, education, demographic and social indicators lead to high unemployment and neet rates among young people.

Table 6. Per Capita Domestic Product for Southeastern Anatolia, Northeastern Anatolia, and Centraleastern Anatolia

	Per capita Gross Domestic Product (based on 2009 TURKSTAT data)		
Year	**Southeastern Anatolia**	**Northeastern Anatolia**	**Centraleastern Anatolia**
2014	13392	13917	12747
2015	15226	15945	14270
2016	16541	18274	16149
2017	19627	21534	19164
2018	23020	24618	22289
2019	26304	28671	26024
2020	31627	35716	31785

Source: https://biruni.tuik.gov.tr/medas

DISCUSSION AND CONCLUSION

The NEET status of young people, who are the human capital of the countries, causes many problems at the social level and constitutes an obstacle to socio-economic development. Identifying the factors that cause young people to be in NEET status is very important for policymakers to determine and implement strategies to reduce the rate of young NEET individuals. In this study, the determinants of being NEET in Turkey were examined separately for the 15-29, 15-24, and 25-29 age groups, using the pooled data of the Household Labor Force Survey for the years 2014-2020. In the study, considering the NUTS 1 region classification of TURKSTAT, the region of residence, education level, age, gender, marital status, and year dummies were used as explanatory variables.

According to the model results, it is seen that women are more likely to be NEET than men, and married people are less likely to be NEET than singles. It has been concluded that being married and being a woman further increases the risk of being NEET. This finding is in line with the expectation as there are more responsibilities for women in households in Turkey and supports the literature (Genda, 2007; Kelly & McGuinnes, 2013, Susanli, 2016). It can be said that since the proportion of married people is higher in the 25-29 age category than in other age categories, and in most developing countries, women are more likely to be NEET in the care of young children and the elderly than men. When the effect of marital status is examined, married people are less likely to be NEET and this finding supports the literature (Abayasekara and Gunasekara, 2020). Model results show that being married and female increases the risk of being NEET. Responsibilities such as housework, child care, and care for the sick and/or elderly increase the probability of married women being NEET.

The results show that individual's education level has an impact on being NEET. The model results obtained for the 15-29 and 25-29 age groups reveal that young people with a low level of education are more likely to be NEET which supports the literature (Kovrova & Lyon, 2013; Bacher *et al*., 2014; Susanli, 2016, Caroleo *et al*., 2020). Primary, secondary, high school, and college/university graduates have a lower risk of being NEET than master's/PhD graduates in the 15-24 age group. When considering the job search period of a master's/PhD graduate who is not involved in education, this result is in line with expectation. The findings obtained from the models estimated for all three age groups show that the region of residence has an effect on the probability of being in NEET status. The regions with the highest probability of being NEET are Southeastern Anatolia, Centraleastern Anatolia, Mediterranean, Eastern Black Sea, and Central Anatolia, respectively. Especially in these regions, in addition to early school leaving, the increase in the unemployment rate in recent years increases the risk of being NEET. When the results of the years are examined in general, it is seen that the risk of NEET has increased in all three age groups in Turkey in parallel with the increase observed globally.

The consequences of the high NEET rate in the young population are long-lasting and should not be seen as just an economic problem, as it has sociological and psychological effects not only for young people but also on the whole society (ILO, 2021). While high unemployment and inactivity rates reduce the productivity of countries, they have negative effects on factors that affect the level of welfare in the long run, such as human capital accumulation and fertility rate (Jimeno and Rodríguez–Palenzuela, 2002). Therefore, effective active labor market policies should be adopted by policymakers in order to reduce the NEET rate in the young population. The education system should be made more effective and training activities should be made sufficient. However, it is very important for the authorized institutions to play an active role in the good management of the transition process of young people from education life to business life. Otherwise, the NEET rate will continue to increase with socioeconomic consequences (Choudhry *et al*., 2012).

Vocational education and training have become important economic policy tools to meet market expectations. They are not only instruments for economic productivity, but also instruments for the self-development and emancipation of individuals. Therefore, the quality of public primary and secondary education should be improved in every region of the country. The education system should be reformed to increase student performance in mathematics, science, literature, soft/behavioral skills, and general competencies for better employability (ILO, 2021).

Gender inequality in the labor market is a major problem in many countries, due to the low female labor force participation rate. Cultural differences aside, the main reason for inactivity among women is mostly related to childcare responsibilities, especially in countries where affordable childcare and child-friendly employment are not available (OECD, 2016). To increase female labor force participation, affordable family-friendly care services should be addressed, which should help not only for childcare but also for aged care and

caring for the disabled. Gender-based support policies that support childcare should be implemented to alleviate the characteristics of the dominant patriarchal culture. Education programs and social services in childcare and labor market policies for young women should be implemented. Work-family life balance of deindustrialization, the increasingly informal economy, and the 'resilience and social security nexus' as key factors behind the NEET problem. Skills-gap or skills-mismatch is assumed to be the main cause of youth unemployment. Current policies mostly focus on vocational training. In addition to these active labor policies and programs, Turkey needs a comprehensive macroeconomic policy plan to deal with the NEET problem. Implementation of employment policy in Turkey remained a piecemeal effort to mitigate the negative effects of the economic and financial crises on the labor market and labor force. Institutional and legislative measures mainly include mechanisms to encourage employers to hire workers with support from the public budget. In the absence of a general transformation to inclusive and employment-rich growth strategies, such piecemeal policies are only symptomatic treatments. More comprehensive programs are needed to reintroduce NEETs in employment, education or training (ILO, 2021).

Finally, we point out several issues for further studies. First, we found evidence of the importance of young people's individual characteristics as the most important reasons for becoming a NEET. According to the literature, in addition to individual characteristics, families' socio-economic characteristics are also relatively influential on being NEET with youths from poor families are more likely to become NEET. Therefore, these characteristics should be examined in further studies. Second, the aim of our study is limited to investigating the determinants of being NEET among young people. However, the term NEET includes various subgroups and each group has different characteristics and needs, so it is a heterogeneous category. Therefore, examining unemployed NEETs, inactive NEETs, youth in education and youth in employment with multinomial discrete choice models will be more beneficial in terms of revealing the status of the Turkish labor market, and to take into account the characteristics of these subgroups.

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Investigation of Serial Dependence Asymmetry and Time Irreversibility in Stock Market Returns of MIST Countries Using the Quantile Periodogram

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ABSTRACT

The stock market indices of the countries are indicators that provide information about the countries' economies and financial stability. The aim of the study is to determine the similarities and differences in the stock market index return behaviors for Mexico, Indonesia, South Korea and Türkiye, which constitute the MIST country group. For this purpose, the spectral density kernel estimator "Quantile Periodogram" was used. The reason why this estimator is preferred is that it allows the investigation of serial dependence at different quantiles-frequencies and it is robust to outliers frequently encountered in return series, heavy-tailed distribution and changes in the distribution at high moments. The asymmetry of the serial dependence in different quantiles-frequencies and time-irreversibility which gives information about whether the financial series behavior is predictable or not, were analyzed with the quantile periodogram. According to the findings, Türkiye is the most preferred country by financial investors among MIST countries, while Mexico is the least preferred. Secondly, it is seen that the long-term behavior predictability of the returns has increased. This means that returns are more stable in the long run. When the findings are evaluated collectively, it is concluded that MIST countries are attractive for long-term financial investment.

Keywords: Stock Market, MIST Countries, Quantile Periodogram, Asymmetry, Time-Irreversibility, Predictability.

JEL Classification Codes: C14, C58, G14

Referencing Style: APA 7

INTRODUCTION

In 2011, Goldman Sachs Research Institute researchers brought together the country group Mexico, Indonesia, South Korea and Türkiye as emerging economies, under the name of MIST. The economies of MIST countries which has similar characteristics in terms of economic growth and population structures are the largest among the country group in the Next-11 stock fund (O'Neill, 2011). MIST countries are also similar in terms of markets, exports and being G-20 members. Çolak (2012) in his article titled "Countries Like MIS(T)" stated that O'Neill's criterion for the abbreviation MIST is that the bonds and stocks of these countries provide high returns to their investors. Yalvaç (2016) in his study titled "The Rise of New Regional Powers in the World System: Comparison of Türkiye, BRICS and MIST Countries" stated that the MIST country group consists of four countries with an upward trend in the Goldman Sachs Equity Fund and although they have differences in terms of political regimes, these countries show similarities in terms of their economic potential and future.

There are different degrees of persistence (asymmetric dependencies) in different quantiles while the financial returns are not persistent on average. For this purpose, the "Quantile Periodogram" method, which can detect dynamic features such as robustness to outliers and heavy tails, extreme dependence, time irreversibility and serial dependence asymmetry was used.

The aim of this study is to examine the stock market index returns of MIST countries and to determine the serial dependency structures of the series in different quantiles and frequencies, whether they are time irreversible and their predictability degrees. In the second section of the study, a literature review on the subject is included. In the third section, the properties of the data set and the variables are introduced. In the fourth section, the "quantile periodogram" estimator is discussed with its various aspects. In the fifth section, the empirical findings are evaluated. In the sixth and last section, the findings are interpreted.

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LITERATURE

In this section, studies on asymmetry, time-irreversibility and quantile periodogram are reviewed and summarized.

Ramsey and Rothman (1993), in their study, examined the relationship between time irreversibility and business cycle asymmetry. For this purpose, they used time-domain time-reversibility (TR) test for business cycle indicators. As a result, "time irreversibility" was determined in the series and it was concluded that the U.S. business cycles were asymmetrical.

Hinich and Rothman (1998) proposed the "REVERSE test", which is the first frequency domain test based on bispectrum for time reversibility. This test is more powerful than the TR test against time-irreversible alternatives. Based on the knowledge that business cycle asymmetry can vary depending on whether macroeconomic fluctuations are time-irreversible or not, they used the frequency domain test for business cycle asymmetry. The imaginary part of the polyspectra is zero for time-reversible stochastic processes. As a result, they concluded that time irreversibility is the rule rather than the exception for the macroeconomic time series of five OECD countries. For the representative set of international monthly macroeconomic time series, business cycle asymmetry is the rule rather than the exception.

Cajueiro and Tabak (2004) analyzed the efficiency and long-term dependencies of 11 emerging markets as well as stock market indices of the U.S.A. and Japan, based on the daily closing prices of the 1992 – 2002 period with the "Rolling Sample Approach" and "Long Range Dependence Measures". It is concluded that the efficiencies of developed markets are stronger than the efficiencies of emerging markets.

Psaradakis (2008) examined the time reversibility of weakly dependent stochastic processes over the weekly index returns of major stock exchanges (Amsterdam, Frankfurt, Hong Kong, London, New York, Paris, Singapore, Tokyo) of eight countries during the 1986-1997 period. It was concluded that the return series are "time irreversible".

Eom et al. (2008) investigated the relationship between the degree of efficiency and predictability in financial time series. In the study, 60 stock market indices were examined. "Hurst Exponent" was used to measure the degree of efficiency and "Hit Rate" was used for predictability. It has been determined that predictability is stronger in market indices with low efficiency.

Lim et al. (2008) recommended the "trispectrum-based time reversibility" test, which is more comprehensive than the bispectrum-based time reversibility test. Between 1996 and 2006, returns were calculated based on 2870 stock market daily closing values of 23 developed and 25 emerging countries. They determined that the stock market index return series of 48 countries are not time reversible. It has been concluded that "time irreversibility" is a rule rather than an exception for stock market indices, stock prices do not follow a random walk process and the non-linearity of the series is often effective on time irreversibility.

Li (2012) analyzed a well-known time series of annual sunspot numbers, with a "quantile periodogram". He revealed that the secondary peaks around the dominant peak were more pronounced in the middle and high quantiles, while they were much weaker in the low quantiles. He recommended "the quantile periodogram" method to detect such quantile-dependent spectral features.

Li (2014) investigated the properties of time series with time dependent variance. There is a stronger view at high and low quantile levels compared to middle quantiles for the time series with zero central position. In the case of stationarity, the appropriate smoothed quantile periodogram can be used to alleviate this problem.

Dette et al. (2015) compared traditional spectral analysis of returns and their squares based on the daily logarithmic returns of the S&P 500 stock index between 1963 -2009 and smoothed rank-based periodograms. As a result, it is seen that the classical approach cannot detect the serial structure. Smoothed periodograms peak at the extreme quantiles and low frequencies, indicating long-range dependence (or non-stationarity) in the tails. In addition, it is determined that the values in the imaginary parts of the smoothed rank-based periodograms are absolutely smaller than the values in the real parts and this gives information about "time reversibility". The fact that the values in the imaginary parts are not zero is an indication of "time irreversibility".

Kley (2016) used S&P 500 stock market index daily closing values between 2007 and 2010 to introduce the quantile periodogram method in the R program. Thus, in order to reveal undetectable features of returns when classical instruments are used, the "quantile periodogram" was proposed in this data range, which includes the 2008 global crisis. A linear serial dependence is not detected while looking at the correlograms of the return series. After examining the correlograms of the squared return

series, it appears that the nonlinear dependence is striking. Therefore, it is not possible to detect nonlinear serial dependence with the classical periodogram based on covariances. Copula spectral density was estimated with quantile periodogram and smoothed quantile periodogram. As a result, serial dependence was detected in the extreme quantiles (0.05 and 0.95).

Kley et al. (2016) focused on quantile spectral processes in their work. They established asymptotic confidence intervals for the smoothed copula rank – based periodogram used in the estimation of copula spectral density kernels.

Flanagan and Lacasa (2016) examined the stock prices time reversibility of 35 companies from NYSE and NASDAQ with the "visibility algorithm" during the 1998 - 2012 period. It was concluded that all the analyzed series were "time irreversible", also some series are more irreversible and the degree of reversibility changes over time.

Birr et al. (2017) introduced a quantile-based spectral approach for locally stationary variables. Based on S&P500 daily returns and a meteorological data set for the 1962 – 2013 period, they found that the copula-based spectra captures the serial dependency in more detail than the classical approach.

Lim and Oh (2021) studied about the spectral analysis of the variables with long-memory properties and the use of quantile periodograms for a non-Gaussian distribution. For this purpose, S&P 500 and NASDAQ stock market volatility data was used. At the end of the study, it was seen that the method was successful in estimating the long memory parameter.

Li (2021) introduces spectral measures based on the quantile periodogram. As a result of the application carried out using S&P 500 index daily return data, it is revealed that the quantile frequency analysis provides extra contributions, compared to the classical methods, to understanding the goodness of fit with regard to financial models, serial dependence and regime shifts in financial stochastic processes.

Jin (2021) developed tests aiming to detect the dynamics of different time series using the Laplace periodogram. For the vibration-based damage detection of a mechanical system, four vibration variables were used. It was concluded that these tests showed high performance against fat-tailed time series and were robust in the comparison of local stationary processes.

DATA

The closing values pertaining to 5930 days between 05 January 1998 and 31 December 2019, regarding the stock market indices of MIST countries were taken from the website named "Yahoo Finance". All analyzes were performed using the "R program". Stock market indices, their symbols and definitions are given in Table 1.

Since the index series are non-stationary, the analysis was continued with the return series obtained by taking the logarithmic difference and accepted to be stationary. Descriptive statistics for each index return series are given in Table 2.

Looking at the minimum and maximum values of the return series, it is seen that the smallest negative and the largest positive return belong to the BIST100 index and that the smallest negative and largest positive returns of the other three series are close to each other. When the standard deviations of the returns are examined, it is seen that the standard deviation of the BIST100 index is slightly larger than the others. The skewness values indicate that only the distribution of the IPC index return is slightly positive - skewed, while the others are slightly negative - skewed and the index return with the lowest skewness is related to BIST100. The kurtosis values show that the sharpest return series are related to the JAKARTA and BIST100 indices. Looking at the median values, the central positions of the series are close to each other.

Table 1: MIST Countries Stock Market Indices, Symbols and Definitions

Stock Market Indices (Symbols)	Definitions
IPC MEXICO (^MXX)	Mexico Stock Market Index
JAKARTA COMPOSITE INDEX (^JKSE)	Indonesia Stock Market Index
KOSPI COMPOSITE INDEX (^KS11)	South Korea Stock Market Index
BIST100 INDEX (XU100.IS)	Türkiye Stock Market Index

Table 2: Descriptive Statistics on MIST Countries Index Return Series

	Minimum	Maximum	Median	Standard Deviation	Skewness	Kurtosis	ADF Stats / Probs
^MXX Return	-0.103	0.121	0.00058	0.014	0.133	9.24	-17.353 prob.<0.01
^JKSE Return	-0.127	0.131	0.00095	0.015	-0.207	11.67	-16.005 prob<0.01
^KS11 Return	-0.128	0.113	0.00070	0.017	-0.198	8.90	-17.042 prob<0.01
XU100.IS Return	-0.199	0.177	0.00086	0.023	-0.036	10.364	-15.916 prob<0.01

Histograms of returns and box plots in Figure 1 were used to visualize the data in Table 2. Box plotting was introduced by statistician John Tukey in 1977 to describe data sets. After examining these graphs together, it is possible to have an idea about the central position, variance, skewness, kurtosis of each return series and the

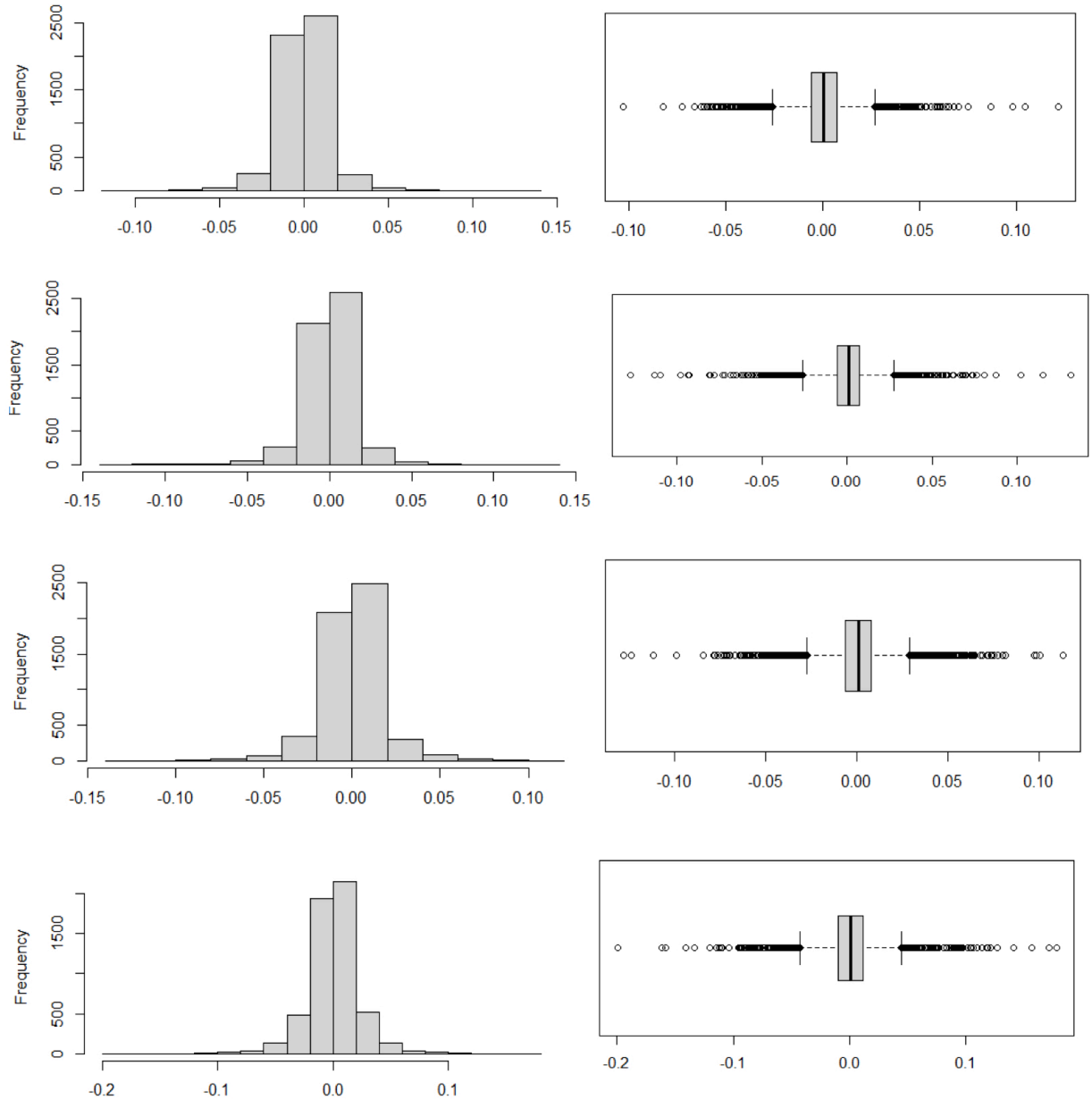

Figure 1: Histograms and Box Plots of IPC, JAKARTA, KOSPI and BIST100 Index Returns from Top to Bottom

existence of outliers. It is evident from the vertical dark line inside the box that the central position of each return series is very close to zero. Considering the starting (minimum) and end (maximum) points of the dashed lines on the left and right of the boxes, it is seen that the length between the minimum and maximum points is very close to each other for each return series. This shows that the variances of the return series are very close to each other.

Since the width of the boxes does not take up much space in the whiskers indicated by the dashed line, it is understood that the series are sharp and also the distribution of the series is close to symmetrical since the lengths of the whiskers on the right and left of the boxes are very close to each other. The points outside the whiskers give the outliers in each return series. Looking at the histograms, the graphs support the impressions obtained from the box plots. The leptokurtic (heavy-tailed and sharp) distribution of returns, which is one of the features frequently encountered in financial analysis, is a common feature in all histograms.

METHOD

Spectral methods are model independent and completely non-parametric (Birr et al., 2017, p.1620). Spectral analysis and frequency domain methods play a central role in the nonparametric approach to time series (Kley et al., 2016, p.1770). The concept of periodogram was first used by Schuster (1898) in the analysis of "hidden periodicities" in the series of meteorological events with a 26-day period.

In periodogram analysis, it takes a long time to complete one full cycle because wavelengths are long at low frequencies. As wavelengths get shorter towards higher frequencies, the frequency of the cycles will increase. The frequencies control the oscillation rate of the curve. In summary, while low-frequency spikes indicate long-term dependence, high-frequency spikes indicate short-term dependency. In addition, there is a relationship between low frequency spectral peaks at the 0.01 quantile level and financial crises & recession periods. These peaks are also an indicator of slowly decreasing positive autocorrelation (long range dependence) (Li, 2014, p.324). When there is a clustering in the return series, low-frequency peak is observed and while there is no clustering in the series, high-frequency peak is observed. In the middle quantiles, this provides information about the short-run behavior of small returns in case of large spikes at higher frequencies.

Periodic movements of a time series can be expressed by writing the autocovariance function as the sum of sine and cosine waves. This approach is known as "Ordinary Spectral Analysis". If a stochastic process is non-Gaussian, ordinary spectral analysis suffers from the weaknesses of its methods (based on conditional mean and variance), i.e. there is a lack of robustness to outliers and heavy tails. In this case, important dynamic features such as changes in skewness and kurtosis, time irreversibility, extreme dependency cannot be detected because only series with second moment can be analyzed here (Kley, 2016, p.1).

The ordinary periodogram applied to nonlinear transformations cannot reveal the asymmetric nature of the serial dependence observed in some financial time series. For this reason, "Ordinary Spectral Analysis" has been replaced by "Quantile Based Spectral Analysis". Thus, serial dependence at any quantile level of the marginal distribution can be detected with the quantile periodogram (Li, 2021, p.272).

At a fixed quantile level, the quantile periodogram has similar asymptotic statistical properties to the ordinary periodogram (Li, 2021, p.277). The quantile periodogram is also used to determine the latent periodicity in quantiles but the "Laplace periodogram" calculated for only 0.50 quantile level and the "ordinary periodogram" based on OLS estimates cannot detect latent periodicity (Li, 2012, p.766). Serial dependence in the frequency domain can be revealed in series without latent periodicity (Li, 2012, p.766).

"Laplace Cross - Covariance Kernel (LCK)", which is used in the quantile-based approach to spectral analysis and "Copula Cross - Covariance Kernel (CCK)" can be expressed as follows:

$$\gamma_k(q_1,q_2) = Cov\left(I\{X_t \le q_1\}, I\{X_{t-k} \le q_2\}\right) \quad q_1,\ q_2 \in R, \qquad k \in Z$$

$$\gamma_k^U(\tau_1,\tau_2) = \left(I\{F(X_t) \le \tau_1\}, I\{F(X_{t-k}) \le \tau_2\}\right) \tau_1,\tau_2 \in [0,1], \quad k \in Z$$

Here, $I\{.\}$ is the indicator function, while F is the marginal distribution function. k represents the lag degree and is an element of the set of integers Z. q is the value of the marginal distribution of X_t corresponding to the quantile τ. CCK is invariant to monotonous transformations, so serial features can be extracted from marginal features. In these measures, there is no requirement to make assumptions about the moments. In case the stochastic process is not Gaussian and quantile-based measures of serial dependence are considered functions with arguments q_1, q_2 or τ_1, τ_2 (quantile

levels), quantile-based approaches provide a richer picture of pairwise dependence than autocovariances (Kley, 2016, p.2). The covariances are replaced by the joint distributions and copulas, while the L^2 loss function is replaced by the L^1- based loss function in quantile-based approaches (Dette et al., 2015, p.783).

Respectively, the "Laplace Spectral Density Kernel" and the "Copula Spectral Density Kernel" are as follows:

$$f_{q_1,q_2}(\omega)=\frac{1}{2\pi}\sum_{k=-\infty}^{\infty}\gamma_k(q_1,q_2)e^{-ik\omega},$$

$$q_1,\ q_2\in R,\ \omega\in R$$

$$f_{q_{\tau 1},q_{\tau 2}}(\omega)=\frac{1}{2\pi}\sum_{k=-\infty}^{\infty}\gamma_k^U(q_1,q_2)e^{-ik\omega},\ \tau_1,\tau_2\in[0,1],\ \omega\in R$$

$q_\tau=F^{-1}(\tau)$ equality applies here. ω represents the frequency value and R is the set of real numbers. Rank-based Laplace periodograms are robust estimators of the "Copula Spectral Density Kernel" because they do not require distributional assumptions. Copula rank based periodogram method is superior to classical methods both in terms of efficiency (detection of nonlinear features) and robustness (finite variance assumption is not required) (Kley et al., 2016, p.29). Laplace periodogram is not an asymptotic unbiased estimator of copula spectral density (Dette et al., 2015, p.27).

Two different estimators can be used for quantile-based spectral analysis of time series. These estimators are called "Quantile regression based periodograms" and "Clipped time series based periodograms". The linear trigonometric quantile regression solution for the quantile regression based periodograms is as follows (Li, 2012, p.765): $\hat{\beta}_n(\omega)=\arg\min_{\beta\in^2}\sum_{t=1}^{n}\rho_\tau\left(Y_t-\lambda-x_t^T(\omega)\beta\right)$ $\rho_\tau(.)$ represents the check function and $\hat{\beta}_n(\omega)$ is an argument named β that minimizes the error variance. Here, $\omega=2\pi f\in(0,\pi)$ is the frequency variable and the equality $x_t(\omega)=\left[\cos(\omega t),\sin(\omega t)\right]^T$ is valid. λ is the τ - quantile of $\{Y_t\}$. In this case, "Quantile Periodogram I" can be written as shown below:

$$Q_{n,I}(\omega)=\frac{1}{4}n\left\|\hat{\beta}_n(\omega)\right\|_2^2$$

Here $\|.\|_2^2$ is the l_2 vector norm. The "Quantile Periodogram II" is as follows:

$$Q_{n,\pi}(\omega)=\sum_{t=1}^{n}\left\{\rho_\tau(Y_t-\lambda)-\rho_\tau\left(Y_t-\lambda-x_t^T(\omega)\hat{\beta}_n(\omega)\right)\right\}$$

The two-quantile periodogram also measures the contribution of the trigonometric regressor. The quantile periodogram I measures the total power of the trigonometric regressor, while the quantile periodogram II measures the net effect of the trigonometric regressor on the cost function (Li, 2012, p.766).

"Rank based copula periodogram ($I_{n,R}$)", one of the clipped time series - based periodograms, is written as follows:

$$I_{n,R}^{\tau_1,\tau_2}(\omega)=\frac{1}{2\pi n}d_{n,R}^{\tau_1}(\omega)d_{n,R}^{\tau_2}(-\omega),\quad \omega\in R,\ \tau_1,\tau_2\in[0,1]^2$$

$$d_{n,R}^{\tau}(\omega)=\sum_{t=0}^{n-1}I\left\{\hat{F}_n(X_t)\le\tau\right\}e^{-i\omega t}=\sum_{t=0}^{n-1}I\left\{R_{n;t}\le n\tau\right\}e^{-i\omega t}$$

Here, $\dot{F}_n(x)$ is the empirical marginal distribution function and $R_{n;t}$ denotes the rank of X_t in X_0,....., X_{n-1}. $[0,1]^2$ is the set of quantile pairs. Since the rank-based copula periodogram is not a consistent estimator of the copula spectral density kernel, the smoothed version of $I_{n,R}$, "$\hat{G}_{n,R}$" is used for estimation. Smoothed rank based copula periodogram is written as follows (Kley et al., 2016, p.1776):

$$\hat{G}_{n,R}(\tau_1,\tau_2;\omega)=\frac{2\pi}{n}\sum_{s=1}^{n-1}W_n(\omega-2\pi s/n)I_{n,R}^{\tau_1,\tau_2}(2\pi s/n)$$

Here W_n is the set of weight functions. Different kernel functions can be used to perform the smoothing process. In this study, the efficient (minimizing the variance) "Epanechnikov Kernel Function" is used. The estimation variance and bias can be reduced along with the size of the local neighborhood if a large amount of data is available (Tschernig, 2004, pp.244-245).

Copula rank based periodogram (CR) used in the study was preferred for estimation because it is more efficient in detecting nonlinear features compared to quantile regression based copula periodogram. Rank based estimators are robust to outliers, heavy tails, changes in higher moments of the distribution. While obtaining the clipped time series, the indicator function takes a value of zero or one depending on whether the values of the time series are above or below a certain threshold value. For instance, the graphs for $\left(I\{X_t\le 0.5\}\right)_{t\in}$ and $\left(I\{X_t\le -1\}\right)_{t\in}$ are as follows (Dette et al., 2015, p.10):

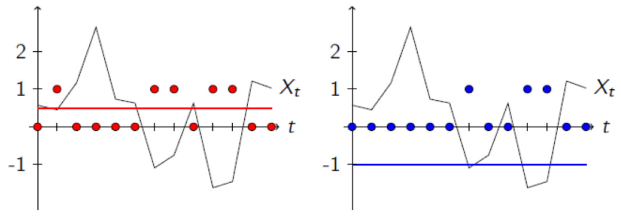

Figure 2: Clipped Time Series for $\left(I\{X_t \le 0.5\}\right)_{t\in}$ and $\left(I\{X_t \le -1\}\right)_{t\in}$

On the red graph in Figure 2, it is seen that the indicator function takes a value of one when X_t takes a value below the red threshold line and a value of zero otherwise. The same is true for the blue graph.

"Fast Discrete Fourier Transform" is preferred because of its performance in the Fourier transform of clipped time series.

EMPIRICAL FINDINGS

While stock market returns are not persistent on average, there are different degrees of persistence (asymmetric dependencies) in different quantiles. For this reason, in the study, the similarities and differences between the return series calculated based on the daily stock market index closing values of the MIST group countries with the emerging economies were analyzed by using the "Quantile Periodograms". Analysis was carried out on the basis of the period between January 5, 1998 and December 31, 2019. Thus, the ongoing pandemic period was excluded from the analysis. The time path graphs of the stock market indices of the MIST group, which consists of Mexico, Indonesia, South Korea and Türkiye, are seen in Figure 3, respectively.

When the time path graphs of the indices are examined, the effect of the 2008 global crisis made itself felt in all indices and caused serious decreases. Also, the effects of regional or national crises are seen in the graphics. For example, the effect of the 1997 Southeast Asian Crisis was detected in the graphics for Indonesia and South Korea. The graph also shows that the 2000 - 2001 crisis in Türkiye had a negative impact on BIST100. In addition, important events in the social, political and economic lives of the countries have caused significant decreases in the indices. In all time plots based on daily closing values of the stock market indices for MIST countries, the "gain-loss asymmetry", which is often seen in financial series, shows itself in the form of large downs and smaller ups. The logarithmic return series, in which stationarity is achieved to a large extent, were calculated using stock market index values.

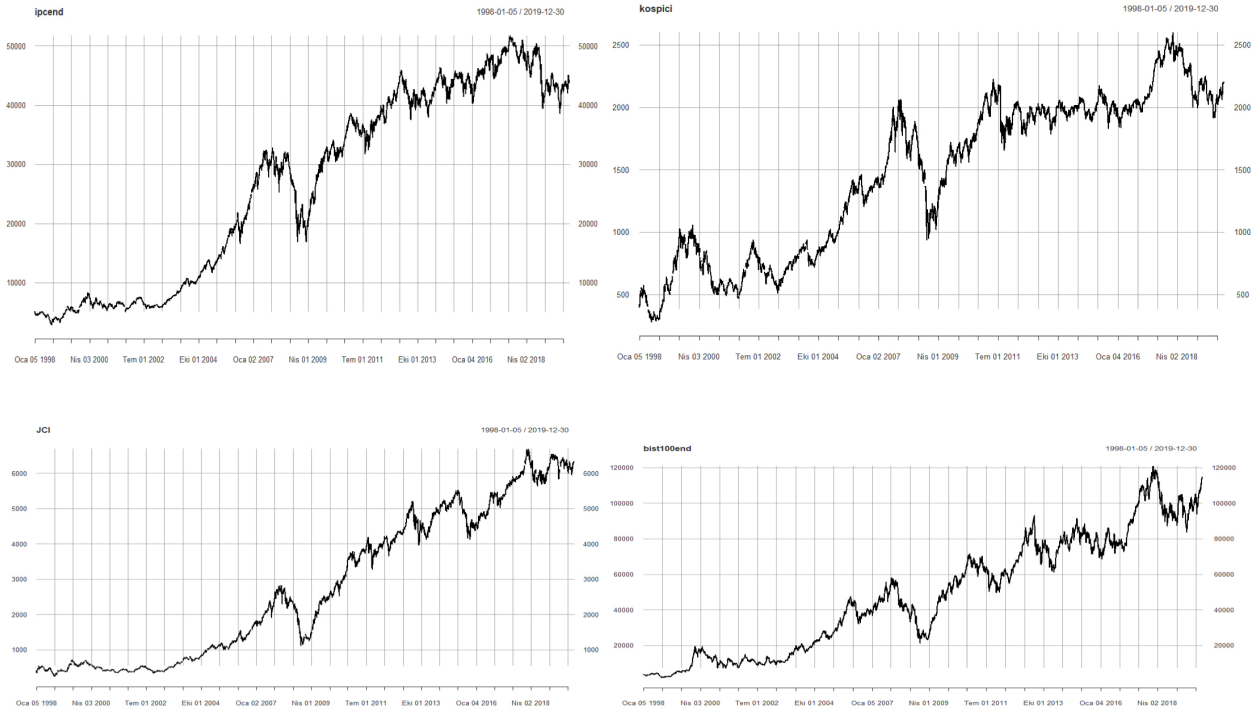

Figure 3: IPC Mexico Index (IPCEND), KOSPI Composite Index (KOSPICI), Jakarta Composite Index (JCI) ve BIST100 Index (BIST100END) Time Path Plots, From Top Left to Bottom Right

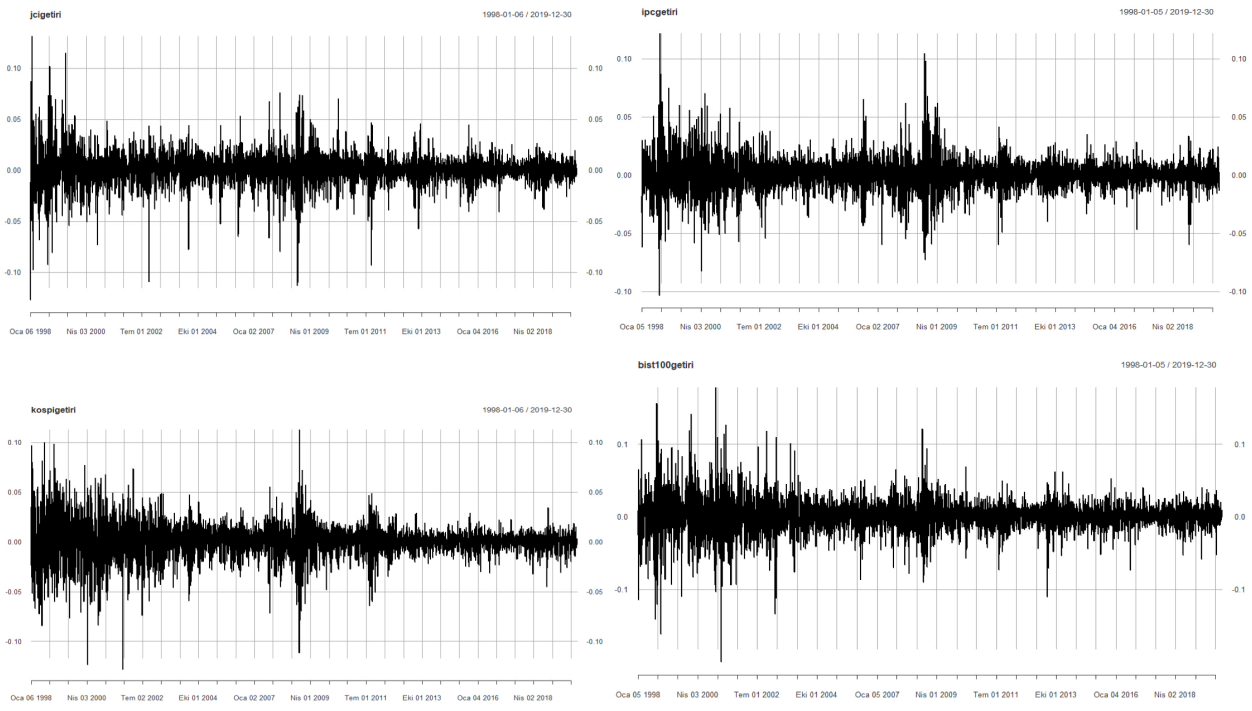

Figure 4: Jakarta Composite Index (JCI), IPC Mexico Index (IPCEND), KOSPI Composite Index (KOSPICI) ve BIST100 Index (BIST100END) Return Graphs, From Top Left to Bottom Right

In Figure 4, it is seen that the volatility clusters in the series differ. According to the correlograms, the return series reflects the "White Noise Process" characteristics, which is one of the stationary stochastic processes, but this situation has disappeared when the correlogram of the squared returns is examined. Although no linear relationship is observed between the returns, slowly decreasing positive autocorrelations are detected from the correlogram of the squared returns and a nonlinear relationship between the returns is striking. This situation

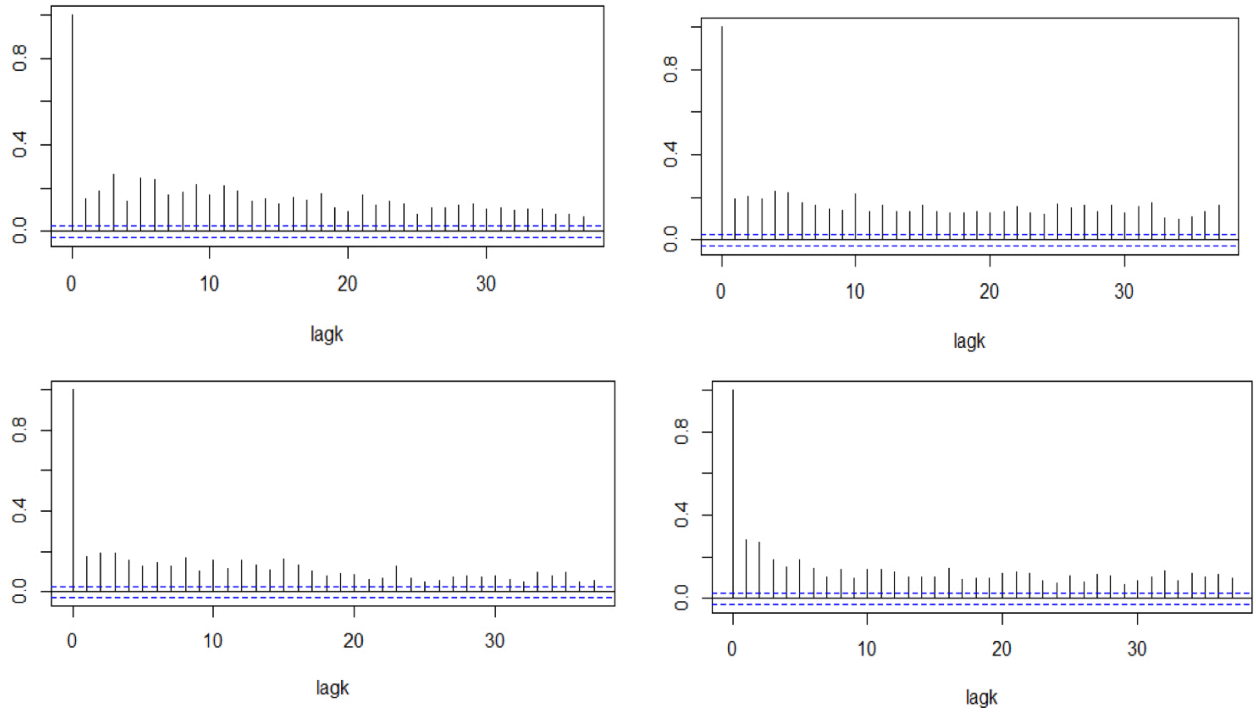

Figure 5: Correlograms of IPC Mexico Index (IPCIND), KOSPI Composite Index (KOSPICI), Jakarta Composite Index (JCI) and BIST100 Index (BIST100IND) Squared Returns, From Top Left to Bottom Right

is also evaluated as a sign of long-term dependence and volatility clustering in the series.

The "Quantile Periodogram" method is also used to reveal interesting behaviors in financial crises because traditional spectral analysis does not say much about the serial dependency structure of the data. Classical spectral methods take into account only covariance - related serial dependencies (Birr et al., 2017, p.1619). Copula spectral density is estimated from the data using the "quantile periodogram" and "smoothed quantile periodogram". The quantile periodogram shows the oscillating behavior of the series around the tau-quantile level (Li, 2021, p.274). As the Bootstrapping method, "Moving Blocks Bootstrap" was used. In this method, each block consisting of consecutive observations is deleted once and the variance of the sampling distribution of the statistical values is calculated (Kunsch, 1989, p.1217). The efficient estimator named "Epanechnikov Kernel" is used for smoothing. The bandwidth value of 0.07 used in the study of Kley (2016) was taken as a reference value and sCR plots were made according to the various bandwidths obtained from different cross - validation selectors (AMISE, UCV, MLCV, MCV) to compare with the sCR plots made with 0.07. According to some plots drawn with bandwidths less than 0.07, calculated by the cross - validation selectors, fluctuating estimates were reached. Moreover, over-smoothed estimates were obtained in some plots based on bandwidths greater than 0.07. For this reason, analyzes were carried out with bw=0.07, which is thought to be more suitable for the bias – variance balance.

In the figures on the following pages are the "Smoothed Quantile Periodogram (sCR)" graphics that give consistent estimates of spectral density functions in the 0 – 0.5 frequency range based on the return data of each stock market index. Small negatives have a stronger dependency structure than big positives due to the asymmetric behavior of actors in financial markets. The difference between extremal and central dependency structures can be seen when looking at smoothed periodograms that contain at least one extreme quantile (0.05 and/or 0.95) together with those in the middle quantiles ($\tau_1=\tau_2=0.5$). The peak at the origin in the extreme quantiles indicates the long-term memory of the extreme events and the non-zero imaginary parts above the diagonal indicate the time irreversibility (Dette et al., 2015, p.805). If the joint distribution of a time series like $\{X_1,X_2,.....,X_n\}$ differs from the joint distribution of $\{X_n,X_{n-1},.....,X_2,X_1\}$, the series is "irreversible". Strong irreversibility indicates that stock prices do not follow a "random walk" process in return series, because the higher the degree of irreversibility, the less the market efficiency. Non-linear and non-Gaussian linear models are "irreversible (directional)".

Hinich and Rothman (1998) suggested bispectrum-based time reversibility test (REVERSE test) in their study. This test is the first frequency domain test for time reversibility. This method tests whether the imaginary part of the estimated bispectrum is equal to zero. Here, it is based on the knowledge that the bispectrum is zero for time reversible stochastic processes. The null hypothesis is as follows :

H_0: Time Reversibility

I.I.D. process is a time-reversible process. Therefore, the time reversibility test is one of the ways to examine the random walk behavior of stock prices. If there is strong irreversibility in the return series, there are significant deviations from the i.i.d. behavior. In this manner, it is determined that stock prices do not follow a "random walk process" (Lim et al., 2008, p.8).

Moving on to the analysis of stock market index returns with "Quantile Periodogram", the smoothed rank - based copula periodogram (sCR) plots for IPC stock index returns are seen in Figure 6.

Judging by the sCR plots that give consistent estimates, there are low frequency dynamics for large positive returns when $\tau=0.95$. The same is true for small negative returns when $\tau=0.05$. Also, the peak at $\tau=0.05$ is larger than the peak at $\tau=0.95$. This shows that there is a stronger clustering effect (dependency in extreme values) in small negative returns than in clustering in large positive returns, that is, the serial dependence at the extremes has an asymmetric structure. Behind this lies the asymmetric and sometimes irrational reactions of economic agents to negative and positive shocks, that is the greater response of financial series to bad news, known as the "Leverage Effect". In the middle quantile, it is seen that the peaks are larger at low and medium frequencies. This indicates that small returns have more medium-term dependency. It is also concluded that the "stochastic time dependent variance" is in question in the series, since the dependence in the middle quantile (0.50) is stronger than the dependence in the extreme quantiles (0.05 and 0.95).

After re-examining Figure 6, considering the information about the REVERSE test and the imaginary parts of the sCR above the diagonal, a "quasi-reversible" structure is seen at high frequencies, while the degree

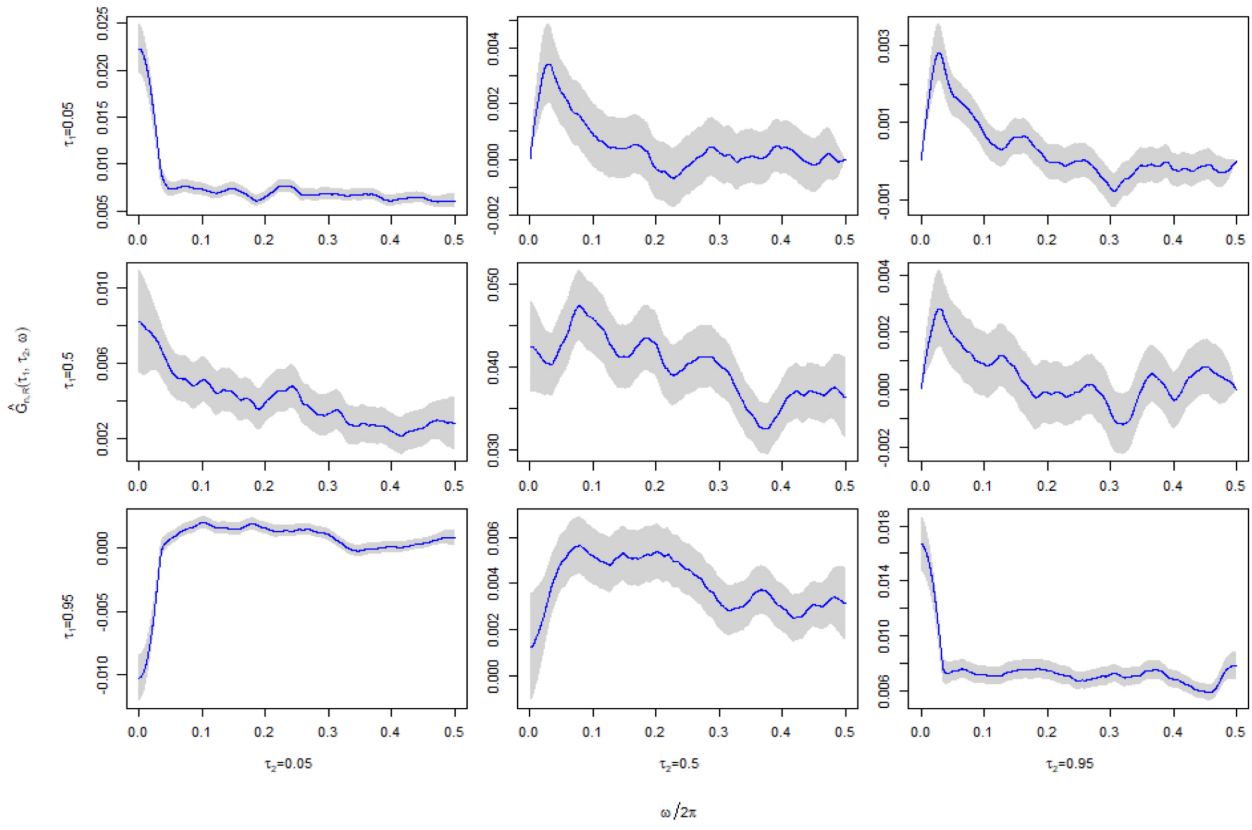

Figure 6: sCR (Epanechnikov Kernel, bw=0.07) Plots

of irreversibility increases towards low frequencies. Especially at low frequencies, that is, in the long run, market efficiency decreases, the series moves away from the random walk process and the predictability of the long-term (one business year) behavior of the series increases. This shows that the IPC index is more stable in the long term than in the short (five working days) and medium term (one working month). The peak at the origin in the extreme quantiles (0.05 and 0.95), that is, in the tails, indicates the long-term memory, that is persistence of the extreme events. The smoothed CR (sCR) plots for JCI index returns are shown in Figure 7.

Looking at the sCR plots that give consistent estimates, there are low frequency dynamics for large positive returns when τ=0.95. The same is true for small negative returns when τ=0.05. Also, the peak at τ=0.05 is almost the same length as the peak at level τ=0.95. This shows that the clustering effect in small negative returns and large positive returns is at the same level, that is, the dependency structure at extreme values seems close to symmetrical. In the middle quantile, the peak is larger at high and medium frequencies and is smaller at very high freqs. This indicates that small returns have more medium and short-term dependencies. It is also concluded that stochastic time dependent variance is in question in the series, since the dependence in the middle quantile (0.50) is stronger than the dependence in the extreme quantiles (0.05 and 0.95).

When Figure 7 is re-examined considering the information about the REVERSE test and the imaginary parts of the sCR above the diagonal, different degrees of irreversibility are observed at all frequencies, while the degree of irreversibility increases towards the middle and low frequencies. Especially at low frequencies, that is, in the medium and long term, market efficiency decreases, the series moves away from the random walk process, and the predictability of the medium and long-term behavior of the series increases. This shows that the JCI index is more stable in the long term than in the short (five working days) term. The peak at the origin in the extreme quantiles (0.05 and 0.95), that is, in the tails, indicates the long-term memory, that is, the persistence of the extreme events. The smoothed CR (sCR) plots for KOSPI index return sare shown in Figure 8.

Looking at the smoothed periodogram plots, it is concluded that clustering is stronger in small negative returns. In the middle quantile, the peaks are more pronounced, especially at low frequencies. This indicates that small returns have medium-term dependence. It is

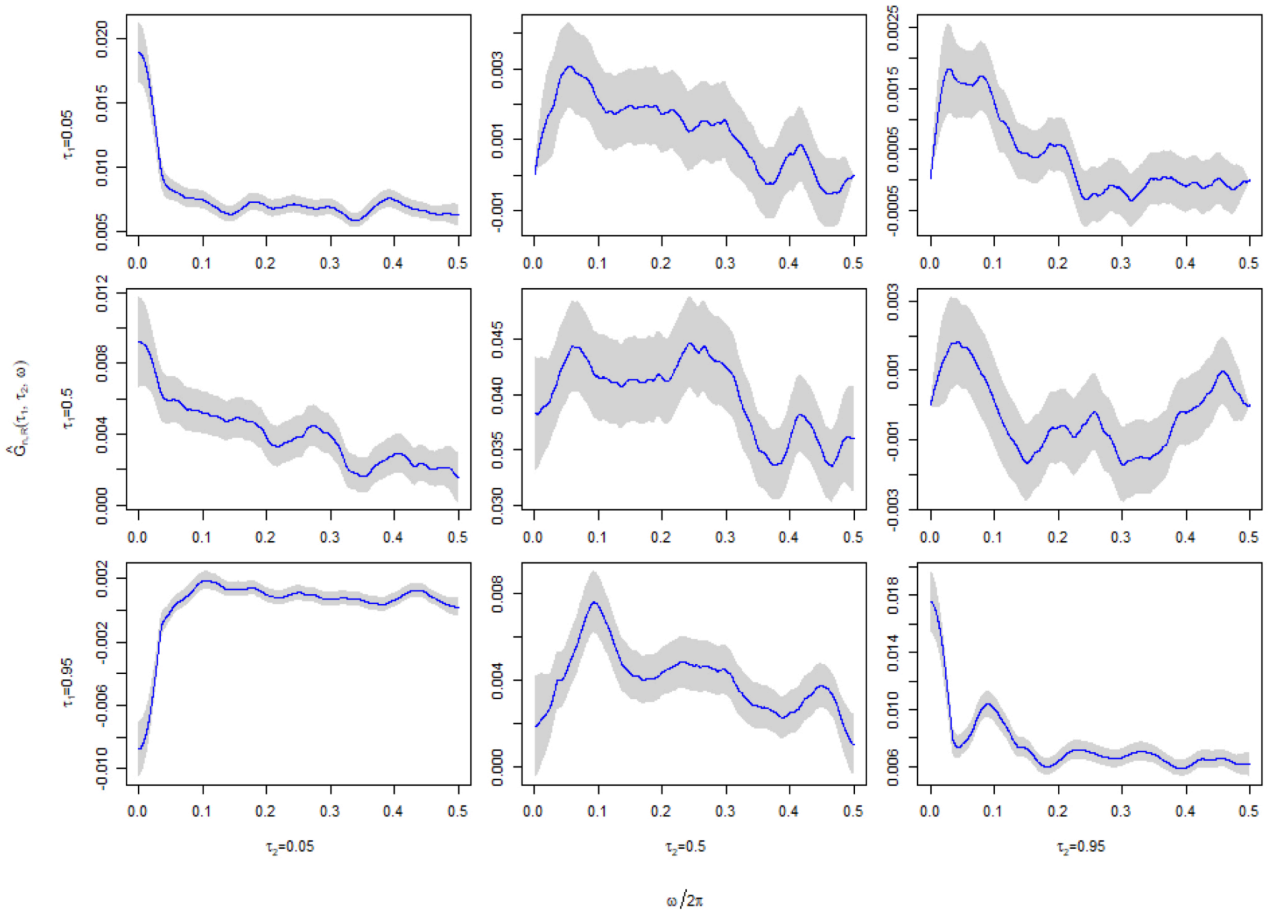

Figure 7: sCR (Epanechnikov Kernel, bw=0.07) Plots

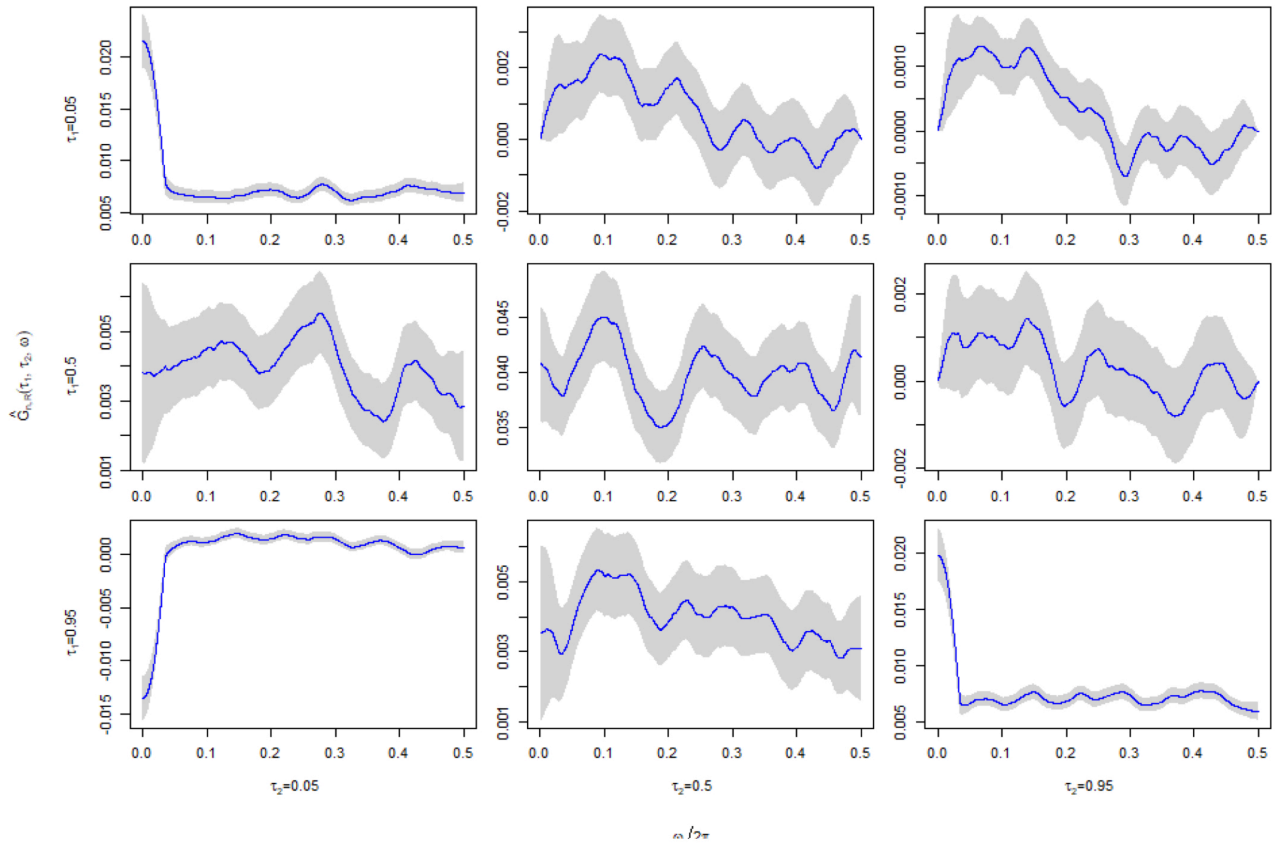

Figure 8: sCR (Epanechnikov Kernel, bw=0.07) Plots

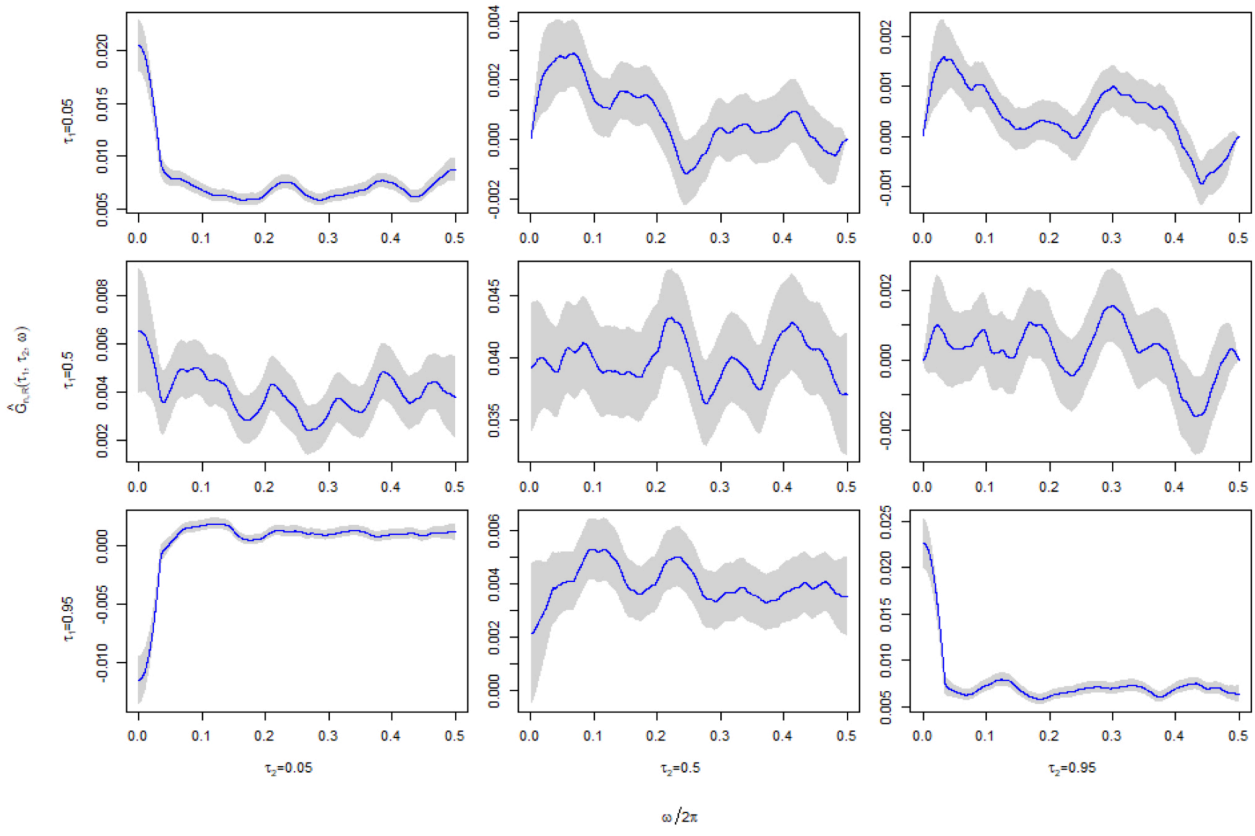

Figure 9: sCR (Epanechnikov Kernel, bw=0.07) Plots

also concluded that stochastic time dependent variance is in question in the series, since the dependence in the middle quantile (0.50) is stronger than the dependence in the extreme quantiles (0.05 and 0.95). After re-examining Figure 8, considering the information about the REVERSE test and the imaginary parts of the sCR above the diagonal, different degrees of time irreversibility are seen at all frequencies, while the degree of irreversibility increases towards low frequencies. Especially towards low frequencies, that is, in the medium term, market efficiency decreases, the series moves away from the random walk process and the behavior predictability of the series in the mid-term increases. This shows that the KOSPI index is more stable in the medium term than in the short (5 working days) and long term (one working year). The peak at the origin in the extreme quantiles (0.05 and 0.95), that is, in the tails, indicates the long-term memory, that is, the persistence of the extreme events. Finally, the smoothed CR (sCR) plots for BIST100 index returns are seen in Figure 9.

Looking at the sCR plots that give consistent estimates, there are low frequency dynamics for large positive returns when τ=0.95. The same is true for small negative returns when τ=0.05 Also, the peak at τ=0.95 is significantly larger than the peak at τ=0.05. This shows that there is a stronger clustering effect in large positive returns than clustering in small negative returns. Unlike other index returns, it is seen with the help of the quantile periodogram that clustering is more effective in large positive returns in the BIST100 index return series. This asymmetrical behavior cannot be explained by the ordinary periodogram of absolute or squared returns. In the mid-quantile, on the other hand, the peaks are greater at the high and very high freqs. This indicates that small returns have more short-term dependencies. It is also concluded that stochastic time dependent variance is in question in the series since the dependence in the middle quantile (0.50) is stronger than the dependence in the extreme quantiles (0.05 and 0.95).

Here as well, when Figure 9 is re-examined considering the information about the REVERSE test and the imaginary parts of the sCR above the diagonal, different degrees of irreversibility are seen at all frequencies, while the degree of irreversibility increases towards low frequencies. Especially towards low frequencies, that is, in the medium term, market efficiency decreases, the series moves away from the random walk process and the behavior predictability of the series in the mid-term increases. This shows that the BIST100 index is more stable in the medium term compared to the short and

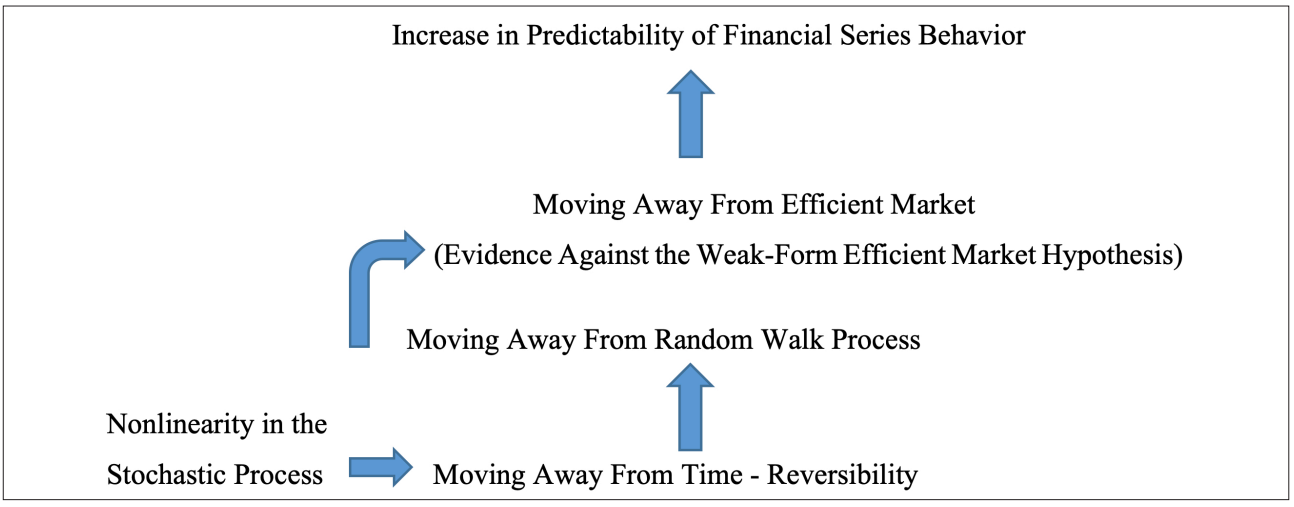

Figure 10: Flowchart from Nonlinearity to Predictability in Emerging Economies

long term. The peak at the origin in the extreme quantiles (0.05 and 0.95), that is, in the tails, indicates the long-term memory, that is, the persistence of the extreme events. In the light of the findings obtained in this study and in the literature, it is seen that the path from the non-linearity of the stochastic process to the behavior predictability of the process, shown in Figure 10, is far from being an exception for the financial series of emerging countries, but close to being the rule.

CONCLUSION

In the study, the "Quantile Periodogram" method was used to analyze the stock market indices of MIST countries. The existence of crises in these countries in the examined period necessitated the use of the "quantile periodogram" method, which enables the analysis of important dynamic features such as the asymmetry of serial dependence in the tails and to detect whether the financial series behaviors are irreversible. When the small negative returns of all stock index return series are analyzed, the effects of both global and local crises in the analysis period are evident. After analyzing the Mexican (IPC) and South Korean stock market index (KOSPI) returns, it is seen that the reaction of economic agents to negative shocks in the tails is greater than the response to positive shocks. When the Indonesian stock market index (JCI) returns are analyzed, the response to negative and positive shocks in the tails is close to symmetrical. Finally by analyzing the Turkish stock market index (BIST100), it has been found that the response of economic agents to positive shocks in the tails is greater than the response to negative shocks. Mexico is the country most affected by negative shocks in the tails and it is followed by South Korea, Türkiye and Indonesia. While Türkiye is the country most affected by positive shocks in the stock market index, it is followed by South Korea, Indonesia and Mexico. According to these results, it is seen that Türkiye is the most preferred country by financial investors among MIST countries, while Mexico is the country that can be preferred least by them.

Looking at the small returns in the indices, there is a medium-term dependency in the IPC and KOSPI stock market indices. Again, in small returns, short and medium term dependency is more common in BIST100 stock market index, while medium and short term dependency is detected in JCI. This situation reveals that Türkiye is the country where the persistence in returns other than small negative and large positive returns is weaker compared to the stock market index returns of other countries.

After evaluating the stock index return series in the context of time irreversibility, it has been determined that the stock index returns of MIST countries are "time-irreversible". This result is in line with other studies in the literature stating that "time-irreversibility" is a rule rather than an exception in financial return series. In the medium and long term, market efficiency decreases, the series moves away from the random walk process and the predictability of the long-term behavior of the series increases.

The long memory in the tails (mostly due to herd behavior) of stock index returns of MIST countries shows that financial investors can make excessive profits by analyzing the past behavior of the series. There is no long memory on small returns, that is, small returns follow a more stationary process than returns in the tails. Evaluating all the results together, it is concluded that the MIST is a preferred country group by financial investors / speculators to earn larger returns.

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Do Consumers Really Care About Social Media Marketing Activities? Evidence from Netflix's Turkish and German Followers in Social Media*

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ABSTRACT

This study investigates the direct effect of social media marketing activities SMMA conducted through firm-generated content (FGC) on purchase intention (PI) and the indirect effects of consumer-based brand equity (CBBE) and consumer-brand engagement (CBE). To understand how the content produced by Netflix on social media platforms such as Instagram, Twitter and Youtube drives consumers with different characteristics. Namely, data were collected from two countries, 203 from Turkey and 235 from Germany, through an online survey. The analysis method of the data is variance-based partial least squares structural equation model (PLS-SEM), and SmartPLS is employed. While none of the SMMA directly affect the PI of Turkish participants, the customization has an effect on PI for German participants. According to the results of the analysis of the data collected from the Türkiye, it is determined that CBBE has a partial mediation (competitive) effect in the relationship between entertainment and PI, and CBBE has a full mediation in the direct effect of trendiness on PI. On the other hand, it is determined that CBBE has a full mediation effect in the direct effect of interaction, trendiness and eWOM on PI for German participants. The mediating role of CBE, which is proposed as a new mediator to fill the gap in the literature, is not confirmed in both samples.

Keywords: Consumer behavior, Social media marketing, Consumer-based brand equity, Consumer-brand engagement, Purchase intention.

JEL Classification Codes: M30, M31, M39

Referencing Style: APA 7

INTRODUCTION

Social media becomes widespread and the presence of end users from all over the world in social media is deepening day by day. The number of unique users in the world is about 4.5 billion at the present time, a projection by Statista (2022) reports that this number may be approximately 6 billion by 2027. On the other hand, not only end users but also non-profit organizations, companies and/or brands actively utilize social media. As individuals' relevance to social media increases, social media creates a completely new era for brands and forces them to find new ways of communicating with their customers (Kozinets et al., 2014; Godey et al., 2016). Thus, social media becomes a unique communication channel that brands may use in their external promotions, customer relationship management and marketing activities (Seo and Park, 2018). Social media marketing activities are carried out by a wide range of firms, from a local brand that reaches customers through an Instagram business account to subscription video on demand (SVOD) platforms such as AmazonPrime, Disney+ and Netflix.

In the last decade, the concept of social media, which has whetted the appetite of marketing practitioners, has also attracted the attention of academics. A vast number of empirical studies investigate the effects of social media marketing activities of brands operating in various industries on consumer behavior (Kim and Ko, 2012; Varinli and Başyazıcıoğlu, 2015; Godey et al., 2016; Torres et al., 2018; Moslehpour et al., 2020; Majeed et al., 2021). For instance, Pöyry et al. (2013) argue that the exploration and participation behaviors of users on community pages on Facebook do not have an effect on purchase intention. On the other hand, Dehghani and Turner (2015) postulate that advertising activities on Facebook may have an effect on purchase intention by creating more interaction, customization and feedback. Similarly, Che et al., (2017) conclude that trust in the Instagram page of a brand is a strong determinant of consumer purchase intention. Even though previous studies focused on consumer responses, primarily the effect of social media marketing activities on purchase intention, few studies considered the mediation of brand equity and consumer-brand engagement in this effect

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This article is extracted from my doctorate dissertation entitled "The Mediation Role of Consumer Based Brand Equity and Consumer-Brand Engagement in Effect of Perceived Social Media Marketing Activities on Purchase Intention: A Comparative Study", supervised by Emrah Cengiz (Ph.D. Dissertation, Istanbul University, Istanbul/Türkiye, 2022)

(Schivinski and Dabrowski, 2013; Poturak and Softic, 2019).

This study aims to add to the literature by revealing the effect of social media marketing activities (SMMA) on purchase intention (PI) and the mediation effect of consumer-based brand equity (CBBE) and consumer-brand engagement (CBE) in the causal relationship between this independent and dependent variable. The research empirically examines these direct and indirect effects, while theoretically employs the S-O-R model framed by Mehrabian and Russell (1974). In brief, based on S-O-R model, it is aimed to determine how the social media contents generated by the brands affect the users (S), how these users react to the social media communications of the brands (O), and the result of the interaction between the consumer and the brand (R). Based on the extant literature, this study proposes the following research questions:

RQ1: Do social media marketing activities effect the purchase intention?

RQ2: Does consumer-based brand equity have mediation effect in the relationship between social media marketing activities and purchase intention?

RQ3: Does consumer-brand engagement have mediation effect in the relationship between social media marketing activities and purchase intention?

RESEARCH FRAMEWORK

Social media is defined as a platform, online media or app that facilitates interaction, content sharing or joint work (Richter and Koch, 2007). These platforms appear in various forms including social networks, blogs, microblogs, rating or check-in. As one of the important milestones in the evolution of the media phenomenon, social media is used more and more widely not only by end users but also by non-profit organizations or profit-oriented organizations. However, there are two types of users, likewise two types of content available on social media depending on who it is posting it: user-generated content (UGC) and firm-generated content (FGC).

As users generate content through motivations such as promoting themselves on social media, gaining the likes of others or influencing other people's perceptions (Berthon et al., 2008) firms also create content through official social media accounts or online communities with consumers involved (Bruhn et al., 2008). Although the UGC consolidates the brand communication in terms of being the wisdom of the crowd, it may create only *echoverse effect* (Hewett et al., 2016). On the other hand, the FGC directly contributes the marketing activities of the company (Colicev, 2019). To further clarify, FGC is characterized by the transmission of direct and customized commercial messages to the target audience instead of the mass media channels.

The fact that social media provides direct transmission of messages to users has not only whetted the appetite of marketing practitioners, but has also attracted the attention of marketing researchers for the last few decades. Even though some of the studies in previous years have focused on UGC, the overwhelming majority have put FGC at the center. For instance, Kim and Ko (2012) consider the marketing activities carried out by companies through official social media channels as *social media marketing activities*. In this study, social media marketing activities (SMMA) are treated in five dimensions in accordance with the perspective framed by Kim and Ko (2012): entertainment, interaction, customization, trendiness, and electronic word of mouth.

Entertainment

It refers to the motivation of individuals to use social media to get away from their daily routines or challenges. According to Muntinga et al. (2011) people use social media platforms for emotional relaxation, satisfying their intellectual or aesthetic tastes and spending leisure time. Social media users are people who seek fun and pleasure on social media as reflections of a hedonic lifestyle (Manthiou et al., 2013; Yu and Yuan, 2019) as well as entertainment significantly increases the perceived value and may stimulate purchase behavior (Song et al., 2015). Hence, following hypotheses are proposed:

H_1: ENT has a positive and direct effect on PI.

H_6: ENT has a positive and direct effect on CBBE.

H_{11}: ENT has a positive and direct effect on CBE.

Interaction

One of the advantages of social media is that it fundamentally alters communication between brands and social media users (Kaplan and Haenlein, 2010; Godey et al. 2016). Muntinga et al. (2011) argue that the antecedents of integration and social interaction are the sense of belonging, desire to make friends, finding emotional support and substituting real-life friends on social media. Numerous studies claim that interaction may change the nature of communication and trigger word of mouth (Kim and Ko, 2012; Moslehpour et al., 2020). For instance, Kim and Ko (2012) examined the

effect of SMMA on purchase intention and brand equity for luxury fashion brands and revealed that interaction is one of the most prominent determinants of both purchase intention and brand equity. Thus, following hypotheses are proposed:

H_2: INT has a positive and direct effect on PI.

H_7: INT has a positive and direct effect on CBBE.

H_{12}: INT has a positive and direct effect on CBE.

Customization

Customization refers to the selection of the target audience of the FGC (Godey et al., 2016). Zhu and Chen (2015) divide social media content into two as customized content and broadcast content. The concept is the extent to which a good or service is personalized to meet the needs of consumers. Brands may establish closer relationships and ensure brand loyalty by personalizing their web pages or social media accounts (Martin and Todorov, 2010). In brief, while customized content such as Facebook posts that appear on users' timelines according to their interests, appeals to a specific and limited audience, general content such as tweets can be accessed by all users. Dehghani and Turner (2015) claim that advertising activities carried out on Facebook can significantly affect brand image and brand value by creating more interaction, personalization and feedback, and thus may have an effect on purchase intention. Thus, suggested hypotheses are as follows:

H_3: CUS has a positive and direct effect on PI.

H_8: CUS has a positive and direct effect on CBBE.

H_{13}: CUS has a positive and direct effect on CBE.

Trendiness

The concept refers to the level of up-to-dateness of the content in social media. Naaman et al. (2011) states that social media are platforms where the latest news and hot topics, as well as information about products or brands, take place. In a similar vein, consumers use social media more as they see it as a more notable source of information than traditional marketing communication channels (Mangold and Faulds, 2009). There are four premises for users to consider to worthy FGC on social media. These are exploration, gathering general information, gathering pre-purchase information, and inspiration (Muntinga et al., 2011). For example, it is empirically proven that the trendy content in the social media accounts of brands operating in the civil aviation industry positively affects customer responses (Seo and Park, 2018). Therefore, following hypotheses are proposed:

H_4: TRE has a positive and direct effect on PI.

H_9: TRE has a positive and direct effect on CBBE.

H_{14}: TRE has a positive and direct effect on CBE.

eWOM

It refers to interactions among consumers about brands or products in social media. Researchers state that the information given by consumers through word-of-mouth about the products or brands has higher reliability and empathy than the information sources created by brands (Gruen et al., 2006; Hudson et al., 2015). Numerous studies state that word-of-mouth communication on social media platforms is more effective on consumers than traditional communication platforms (Chu and Kim, 2011; Teng et al., 2017). Moslehpour et al. (2020) reveals that all of the dimensions of social media marketing activities have an impact on purchase intention, the effect of word of mouth in particular. Therefore, proposed hypotheses are as follows:

H_5: eWOM has a positive and direct effect on PI.

H_{10}: eWOM has a positive and direct effect on CBBE.

H_{15}: eWOM has a positive and direct effect on CBE.

Consumer-Based Brand Equity

It refers to the sum of the values consumers attribute to the brand. The most fundamental functions of brands are to guide consumers' knowledge levels, perceptions, attitudes and behaviors (Christodoulides and Chernatony, 2010). Evaluating the brand only with financial indicators is insufficient to reach consumers who have become the leading actor of marketing, not the target of marketing any longer. A study by Karman (2015) on Starbucks customers in Indonesia in the context of social media marketing, reveals that the effect of brand equity on purchase intention is statistically significant. Therefore, following hypothesis is proposed:

H_{16}: CBBE has a positive and direct effect on PI.

Consumer-Brand Engagement

It is characterized by repeated interactions that develop emotional, psychological and/or physical relationships between the consumer and the brand (Hollebeek et al., 2014: 150). Kozinets (2014: 9) emphasizes that brand awareness and brand loyalty are no longer sufficient

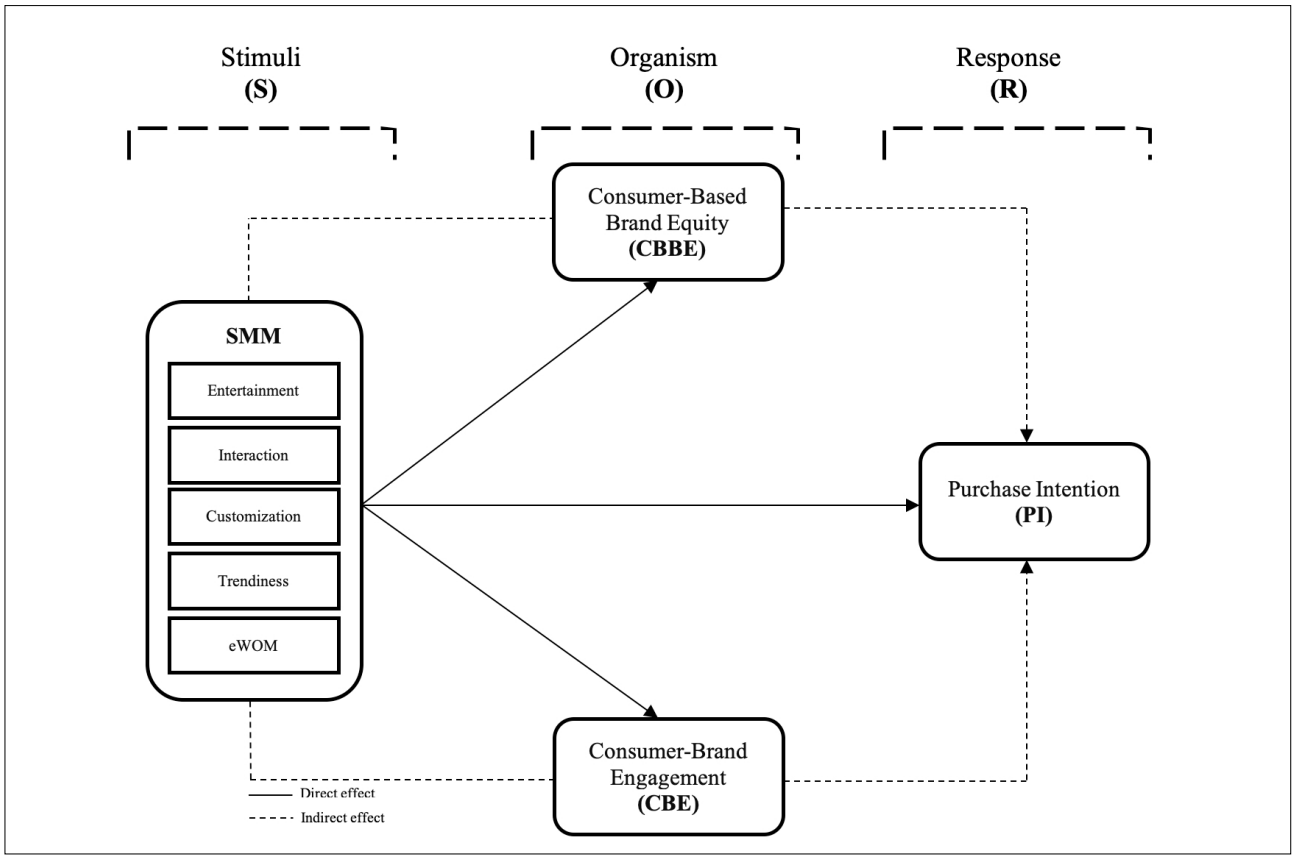

Figure 1: Research Model

for brands, that marketing practitioners should seek emotional branding such as the possible emotional relation and brand love that may occur between consumers and the brand. In this study, the concept of consumer-brand engagement is examined in three subdimensions as cognitive, emotional and behavioral. In the context of social media marketing, Hanaysha (2021) obtained data from customers of fast-food brands operating in the United Arab Emirates through a survey, and as a result of the research, it is concluded that consumer-brand engagement has a statistically significant effect on purchase intention. Thus, following hypothesis is proposed:

H_{17}: CBB has a positive and direct effect on PI.

Mediation of CBBE and CBE

In the last decade, a large number of relevant studies have focused on the direct impact of SMMA on consumer responses, particularly on purchase intention. (Kim and Ko, 2012; Pöyry et al., 2013; Godey et al., 2016; Yadav and Rahman, 2017; Seo and Park, 2018) Similarly, there are many empirical researches investigating the effect of SMMA on CBBE or CBE (As'ad and Alhadid, 2014; Jayasingh and Venkatesh, 2016; Jayasuriya and Azam, 2017; Zollo et al., 2020; Hazzam, 2021). However, the number of examinations of the specific indirect effect of CBBE on the effect of SMMA on PI is quite limited (Majeed et al., 2021). Additionally, there are limited empirical studies addressing the indirect effect of CBE on the effect of SMMA on PI (Choedon and Lee, 2020). In this study, the following hypotheses are proposed in order to add to the literature:

H_{18}: CBBE mediates the effect of ENT on PI.

H_{19}: CBBE mediates the effect of INT on PI.

H_{20}: CBBE mediates the effect of CUS on PI.

H_{21}: CBBE mediates the effect of TRE on PI.

H_{22}: CBBE mediates the effect of eWOM on PI.

H_{23}: CBE mediates the effect of ENT on PI.

H_{24}: CBE mediates the effect of INT on PI.

H_{25}: CBE mediates the effect of CUS on PI.

H_{26}: CBE mediates the effect of TRE on PI.

H_{27}: CBE mediates the effect of eWOM on PI.

In this study, CBBE and CBE are embraced as mediator variables. Mediator analysis essentially helps to find out how a mediator variable affects the effect of an independent variable on the dependent variable in

order to enhance the theory (Hayes, 2013). However, it is necessary to base the decision on determining the mediator variable both theoretically and empirically (Rungtusanatham, et al., 2014). In this study, the stimulus, organism and response (S-O-R) model of Mehrabian and Russell (1974) is used on a theoretical map. In this research, it is focused on how FGC affects social media users (S), how users exposed to social media messages of the brand give feedback to these messages (O), and how this interaction results through the S-O-R model (Figure I).

METHODOLOGY

Sampling and data collection

Target population of this research is social media users in Türkiye and Germany who follow any of Netflix's official accounts on social media platforms such as Instagram, Twitter and/or YouTube. It is not possible to clearly calculate the number of the whole population, as there are various complex situations, such as the users who follow the official accounts of Netflix may be from a third country. Random sampling which is generally used in internet-based data collection methods nowadays (Altunışık et al., 2007), is used as a sampling method within the scope of the research. A simple random sampling method was used, which requires that each subunit of the population has an equal chance of being selected in the sample, and basically each of the participants ranked from 1 to N is selected according to result in a "lottery" or "drawing of lots" way (Dura et al., 2010). The main reason for using this method is that the probability of choosing the participants from the target population is statistically equal.

There are two basic approaches to testing the power of the sample in terms of size. The major of these is the approach in which the sample size is calculated depending on the total number target population (Saunders et al., 2003; Kurtuluş, 2010). The second one, which is frequently referred to in the recent studies, argues that the sample size should be calculated depending on the number of conditions (items), the number of paths or the analyzes method (Tanaka, 1987; Barclay, 1995; Faul et al., 2007: 2009). For example, Tanaka (1987) argues that the sample size must be 5 times the total number of items in the measurement tool, while Barclay (1995) argues that the sample size must be 10 times the number of paths in the research model.

On the other hand, the tool named G*Power, which calculates the optimum sample size with the aim of increasing the effect size and minimizing the Type I and Type II errors, based on the total number of latent variables in the measurement tool of the sample size, was developed by Faul et al. (2007; 2009). According to the calculation of the G*Power (F^2 effect size=0.15; α(Type I error)=0.05; β(Type II error)= 0.20 and 7 predictors) the minimum number of samples to be reached within the scope of this study must be at least 153. As a result, while 235 out of 298 questionnaires filled in Türkiye are valid, 203 out of 270 responses collected from Germany meet the criteria calculated by G*Power.

Data Collection

The survey form consists of three parts. In the first part, there is a filter question. In accordance with the sample selection criteria of the research, potential respondents are asked whether they follow at least one of Netflix's official accounts on social media platforms such as YouTube, Twitter and/or Instagram. While the participants who answered *Yes* to this question continued with the survey, the survey form ended for the participants who answered *No*. In the second part of the survey form, the scales used in the research and using a 5-point Likert are included. In the third part of the survey form, there are questions about the demography of the respondents. The scale developed by Kim and Ko (2012) is used to measure SMMA variables consisting of 5-point Likert items listed as ENT (4), INT (4), CUS (5), TRE (3) and eWOM (3). The CBBE, which includes a total of 12 items for brand awareness, brand associations, brand loyalty and perceived quality, is measured by adapting and using the scale developed by Yoo and Donthu (2000) into Turkish and German. There are 12 items in total at the cognitive, emotional and behavioral levels in the CBE. The scale developed by Leckie (2016) and used by Cheung et al. (2020) are translated into Turkish and German and employed. Data were collected online between 28 February 2022 and 01 April 2022 via GoogleForms. All of the scales were translated from English to Turkish and German in accordance with the method of back translation.

Data analysis

The quantitative data are analyzed by structural equation modeling (SEM). SEM is used in disciplines such as economics, educational sciences, management, psychology and marketing. SEM is one of the statistical methods used in the analysis of multivariate relationships. This method, which was first introduced to the literature as *path analysis* by Wright (1934) has become one of the most frequently preferred methods in the analysis of empirical studies in which holistic models

based on effect or cause are tested in the following years (Diamantopoulos et al., 2008: 6). In structural equation modeling, one of the main purposes is to determine the direction and power of the effect/cause among the variables in the conceptual model established by the researchers (Kandemir, 2015: 451). LISREL, which was programmed by Jöreskog and Sörbom, in which linear structural relationships were tested; EQS, in which equations such as difference tests, multiple regressions and EFA are tested, and AMOS, which is developed by IBM SPSS patch, where effect structures can be analyzed are some of these programs. While LISREL, EQS and AMOS package programs are generally used for testing covariance-based structural equation models, new generation package programs such as PLS-Graph, WarpPLS and SmartPLS are generally used for testing variance-based partial least squares structural equation models (PLS-SEM) (Schumacker and Lomax, 2004).

The data is analyzed by the (PLS-SEM) method and a two-step approach to SmartPLS3 v 3.3.5 is embraced (Ringle et al., 2015; Hair et al., 2021). In the analysis process of the data, respectively, the reliability and construct validity conditions are examined, and then the direct effect analyzes between the research variables and the indirect effect analyzes in which the mediator variables are included.

Besides, two more confusion regarding the analyzes of the data need to be clarified. Firstly, the basis of CBBE with four subdimensions and whether the CBE, which consists of three subdimensions, is measured by reflective or formative measurement models, although the five dimensions of SMMA are handled separately and independently from each other. To be more explanatory, it is claimed that the variance of the latent variable in reflective measurement models explains the covariance between the scales, and the items in the scale are considered as *effect scale items* and reflect the structure (Aksay and Ünal, 2016). In other words, causality in reflective models is *from the latent variable to the measurement items*, and the possible change in the latent structure causes a change in the items. The constructive measurement model, in which the measurers are the cause of the variable, are the models in which the causality is *from the measurement items to the latent variable* (Doğan, 2017: 76). Therefore, the dimensions in the SMMA are not as a single main structure, but independently of each other; entertainment, interaction, customization, trendiness and eWOM. In other words, causality in SMMA structure is *from structure to measurement items*. Law and Wong (1999) claims that such structures should be based on previous studies, provided that they are suitable for the purpose of the research. Thus, considering each dimension under the SMMA as a reflective is theoretically confirmed by Muntinga et al.'s (2011) study, while it is empirically endorsed by Godey et al.'s (2016) empirical study. On the other hand, it is consistent with previous studies that the dimensions in CBBE and CBE structures are not reflective. Because in the studies conducted by Seo and Park (2018) and Choedon and Lee (2020), CBBE is considered as a single structure and CBE is also treated by Tektaş and Uğur (2018) and Shanahan et al. (2019) has been considered as an integrated structure in their studies. Secondly, multiple mediators may be used in PLS-SEM. In this study, the indirect effects of two mediator, CBBE and CBE, are observed. If more than one mediator is included in the observation, three options appear. The first option is that there is a *causally correlated relationship* between the mediators, the second is that there is a *uncausally correlated relationship* between the mediators, and the

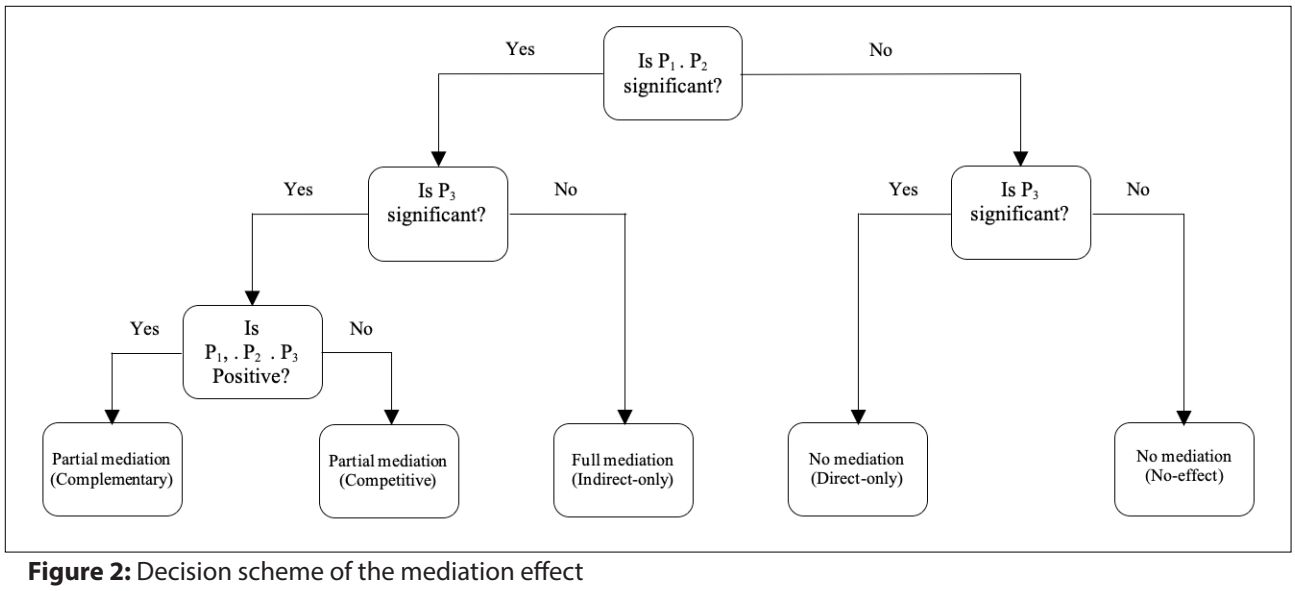

Figure 2: Decision scheme of the mediation effect

third is that the mediators are *completely independent* from each other (Jérolon et al. 2021). In brief, since the mediators in this study are independent of each other because they were not observed to be related to each other in previous years' studies, the parallel (specific indirect) effect of two mediators is examined. The decision scheme regarding the mediating effect of a variable in PLS-SEM is shown in Figure 2 (Zhao et al., 2010).

RESULTS

Validity and reliability

In the two-step approach to be tested by PLS-SEM, the coefficients related to internal consistency, convergent validity and discriminant validity were first inspected before testing the research model. Before that, factor loadings were examined. The threshold value of the loadings is accepted as 0.6, which gives less tolerance in accordance with the studies of Afthanorhan (2013) and Doğan (2019), and items lower than 0.6 are excluded from the model. 5 items (CUS4, CBBE1, CBE1, CBE8 and CBE9) were removed and factor loadings were recalculated, CUS5 was also excluded from the model since the former loading of CUS5 was 0.613 and the loading decreased to 0.579, for the Turkish sample. For the German sample, 13 items (INT1, CUS4, CUS5, CBBE6, CBBE8, CBBE 9, CBBE10, CBBE12, CBE1, CBE2, CBE8, CBE9, and PI2) with loadings lower than 0.6 were removed from the model in the first stage. After the items were removed, factor loadings were recalculated and no value below the 0.6 level was found. Following the two-step approach, Cronbach's Alpha and Composite Reliability (CR) coefficient, which show the level of internal consistency, were examined. Additionally, Henseler et al. (2016) states that Cronbach's Alpha may be misleading in some cases and the Rho_A should also be taken into account in determining the internal consistency, so the Rho_A coefficient was also examined. Although there are various approaches in the literature regarding the acceptable level of Cronbach's Alpha, the threshold value is accepted as 0.60 in this study (Bernstein, 1994; Hair et al., 2021). There are also various approaches regarding the acceptable threshold level of the CR coefficient. For example, Bagozzi and Yi (1988) consider values greater than 0.60 acceptable, Hair et al. (2021) indicates that it should be between 0.70 and 0.95 and Baroroh and Mahardhika (2018) state that it should be greater than 0.70. CR coefficients greater than 0.60 are assumed to be acceptable in this study. CR coefficients greater than 0.60 are assumed to be acceptable in this study. Finally, within the scope of this study, the critical threshold value for the rho_A coefficient is 0.70 (Henseler et al., 2016). In order to test the convergent validity of the measurement model, it is necessary to calculate the average variance extracted (AVE) coefficients. AVE represent the levels of independence of variables from each other (Pant, 2020: 1021). There are various approaches in the literature regarding the acceptable range of the AVE. For example, Fornell and Larcker (1981) and Chin et al. (1998) state that the threshold value of this coefficient is 0.50, while Hair et al. (2021) argues that AVE greater than 0.40 are at an acceptable level. Table 1 shows the internal consistency and convergent validity coefficients for datasets collected from Turkish and German respondents.

In Table 1, it is seen that for both Turkish and German samples, Cronbach's Alphas are considerably greater than the critical level of 0.60. In addition, all of the CR coefficients for both samples are above the critical level of 0.60 and almost all of the rho_A coefficients are above the value of 0.70, except for the coefficient of the TRE (0.693) in the data collected from the German respondents. Although the aforementioned rho_A coefficient is negligibly lower than the threshold value of 0.7, for instance, Toukabri (2015) stated that rho_A should be greater than 0.5 and Fadhel et al. (2019) also states

Table 1: Measurement Results of the Research Model

Variables	Cronbach's Alpha		Composite Relability		Rho_A		AVE	
	Turkish	German	Turkish	German	Turkish	German	Turkish	German
ENT	0.807	0.759	0.873	0.847	0.813	0.775	0.633	0.584
INT	0.853	0.657	0.899	0.806	0.886	0.679	0.692	0.582
CUS	0.814	0.733	0.890	0.843	0.841	0.841	0.731	0.647
TRE	0.794	0.679	0.878	0.824	0.808	0.693	0.707	0.610
WOM	0.775	0.730	0.869	0.848	0.783	0.731	0.689	0.651
CBBE	0.892	0.861	0.911	0.894	0.898	0.866	0.485	0.548
CBE	0.872	0.829	0.902	0.876	0.884	0.840	0.573	0.544
PI	0.805	0.761	0.873	0.862	0.812	0.762	0.632	0.677

Table 2: Fornell-Larcker Criterion for Discriminant Validity (Turkish Participants)

Variables	ENT	INT	CUS	TRE	eWOM	CBBE	CBE	PI
ENT	**0.795**							
INT	0.544	***0.832***						
CUS	0.723	0.724	***0.855***					
TRE	0.704	0.673	0.527	***0.841***				
eWOM	0.614	0.539	0.627	0.691	***0.830***			
CBBE	0.544	0.481	0.546	0.595	0.472	***0.696***		
CBE	0.675	0.418	0.527	0.498	0.471	0.684	***0.757***	
PI	0.385	0.435	0.546	0.483	0.432	0.689	0.508	***0.795***

Table 3: Fornell-Larcker Criterion for Discriminant Validity (German Participants)

Variables	ENT	INT	CUS	TRE	eWOM	CBBE	CBE	PI
ENT	***0.764***							
INT	0.386	***0.763***						
CUS	0.656	0.578	***0.805***					
TRE	0.560	0.536	0.584	***0.781***				
eWOM	0.333	0.325	0.374	0.436	***0.807***			
CBBE	0.393	0.707	0.546	0.554	0.408	***0.740***		
CBE	0.435	0.464	0.406	0.446	0.465	0.735	***0.738***	***0.823***
PI	0.243	0.546	0.450	0.452	0.275	0.721	0.497	

that rho_A coefficients greater than 0.6 are acceptable. On the other hand, the AVE coefficients of the datasets collected from both Turkish and German sample are at an acceptable level. All of the AVE coefficients are above the 0.50 level, except for the AVE of the CBBE of the Turkish participants (0.485) and this AVE is greater than 0.4, which is another acceptable threshold (Hair et al., 2021).

Fornell-Larcker criterion was employed for the discriminant validity. In the Fornell-Larcker criterion, the values in the columns of each structure should be greater than the values in the rows of other structures (Wong, 2013). Table 2 shows the Fornell-Larcker criterion coefficients of the structures included in the measurement model tested for the Turkish sample.

Table 3 represents the Fornell-Larcker criterion coefficients of the structures included in the measurement model established for the German participants.

In Tables 2 and Table 3, it is seen that the values in the column of each structure in the measurement model tested for both Türkiye and Germany samples are higher than the values in the rows of other structures and are compatible according to the Fornell-Larcker criteria.

Testing the structural model

At this phase, firstly, R^2 coefficients which indicate the percentage of the exogenous variable predicting the endogenous variable in linear effects in the measurement model (Kılıçlı and Oğrak, 2020: 353) and the measurement coefficient regarding the predictive power of the structural measurement model, are interpreted. As the R2 coefficient, which can take a value between 0 and 1, approaches 1, its explanatory power increases (Hair et al., 2021). Starsed et al. (2018) states that even a value of 0.10 may be sufficient. On the other hand, Henseler et al. (2011) assumes that if the R2 value is 0.25, the level of explanation of the exogenous variable by the endogenous variable of the exogenous variable is weak; if it is 0.50, it indicates a medium-level, and if it is 0.75 and above, it indicates a strong-level. In the marketing and especially consumer behavior studies, it is stated by Bourini and Bourini (2016: 461) that R2 values of 0.20 and above are at an acceptable level. Table 4 shows the adjusted R2 indicating the level of explanation of exogenous variables by endogenous variables in the measurement model established for the analysis of data collected from Turkish and German groups.

Table 4: Adjusted R2 for Exogenous Variables

Exogenous Variables	Adjusted R^2	
	Turkish	German
CBBE	0.403	0.554
CBE	0.464	0.355
PI	0.524	0.525

In Table 4, it is seen that the exogenous variables in the measurement model established for both Türkiye and Germany samples are medium-level explained by endogenous variables. Table 5 reflects the results of direct effect analyzes in the structural model tested through data collected from Turkish participants.

direct effects in the model are statistically significant according to the coefficients in the measurement model tested for the German participants. Accordingly, the effects of ENT (p=0.042), CUS (0.028) and CBBE (p=0.000) on PI are statistically significant. On the other hand, INT (p=0.028), eWOM (p=0.014) and TRE (p=0.020) have

Table 5: Results of Direct Effects in the Structural Model (Turkish Participants)

Hypotheses	Variables	Standardized β coefficient	Standard Error	t value	P value	Decision
H_1	ENT→PI	-0.206	0.079	2.599	0.009**	Rejected
H_2	INT→PI	0.086	0.073	1.179	0.238	Rejected
H_3	CUS→PI	0.083	0.083	1.056	0.291	Rejected
H_4	TRE→PI	0.039	0.097	0.349	0.727	Rejected
H_5	eWOM→PI	0.103	0.092	1.135	0.256	Rejected
H_6	ENT→CBBE	0.203	0.084	2.370	0.018*	Supported
H_7	INT→CBBE	0.089	0.077	1.113	0.266	Rejected
H_8	CUS→CBBE	0.088	0.091	0.912	0.362	Rejected
H_9	TRE→CBBE	0.301	0.112	2.766	0.006**	Supported
H_{10}	eWOM→CBBE	0.040	0.094	0.380	0.704	Rejected
H_{11}	ENT→CBE	0.598	0.092	6.512	0.000***	Supported
H_{12}	INT→CBE	0.040	0.076	0.482	0.630	Rejected
H_{13}	CUS→CBE	0.046	0.086	0.523	0.601	Rejected
H_{14}	TRE→CBE	-0.040	0.088	0.474	0.635	Rejected
H_{15}	eWOM→CBE	0.087	0.069	1.236	0.217	Rejected
H_{16}	CBBE→PI	0.588	0.061	9.568	0.000***	Supported
H_{17}	CBE→PI	0.096	0.066	1.443	0.149	Rejected
p<0.05 *. p<0.01 **. p<0.001 ***						

Table 6 shows the results of direct impact analyzes in the structural model tested through data collected from German participants.

Table 5 indicates that 5 of the 17 direct effects in the measurement model are statistically significant in the confidence interval. Accordingly, the direct effect of the ENT on PI (p=0.009), on CBBE (p=0.018) and on CBE (p=0.000), and the direct effect of CBBE on PI (p=0.000) statistically significant. Table 6 shows that 9 of the 17

a statistically significant effect on CBBE. Morever, the effect eWOM (p=0.000) on CBE variable is statistically significant. Last but not least, although the p value of ENT is lower than 0.05 in both samples, the hypotheses are not supported because the β are negative (β=-0.206, β=-0.149).

According to the bootstraping method in mediation analysis, in order for it to be accepted as a mediator effect, first of all, the direct relationship between the two

Table 6: Results of Direct Effects in the Structural Model (German Participants)

Hypotheses	Variables	**Standardized β coefficient**	**Standard Error**	**t value**	**P value**	**Decision**
H_1	ENT→PI	-0.149	0.076	2.042	0.042*	Rejected
H_2	INT→PI	0.024	0.067	0.372	0.710	Rejected
H_3	CUS→PI	0.137	0.063	2.206	0.028*	Supported
H_4	TRE→PI	0.101	0.067	1.558	0.120	Rejected
H_5	eWOM→PI	-0.043	0.074	0.537	0.592	Rejected
H_6	ENT→CBBE	-0.012	0.058	0.251	0.802	Rejected
H_7	INT→CBBE	0.519	0.058	8.993	0.000***	Supported
H_8	CUS→CBBE	0.115	0.061	1.896	0.059	Rejected
H_9	TRE→CBBE	0.158	0.068	2.333	0.020*	Supported
H_{10}	eWOM→CBBE	0.138	0.055	2.464	0.014*	Supported
H_{11}	ENT→CBE	0.218	0.084	2.621	0.009**	Supported
H_{12}	INT→CBE	0.268	0.072	3.740	0.000***	Supported
H_{13}	CUS→CBE	-0.043	0.081	0.574	0.566	Rejected
H_{14}	TRE→CBE	0.085	0.080	0.992	0.322	Rejected
H_{15}	eWOM→CBE	0.293	0.052	5.626	0.000***	Supported
H_{16}	CBBE→PI	0.664	0.095	6.928	0.000***	Supported
H_{17}	CBE→PI	-0.019	0.082	0.222	0.825	Rejected
p<0.05 *. p<0.01 **. p<0.001 ***						

Table 7: Results of Indirect Effects in the Structural Model (Turkish Participants)

Hypotheses	**Variables**	**Standardized β coefficient**	**Standard Error**	**t value**	**P value**	**Mediating Effect**	**Decision**
H_{18}	ENT→CBBE→PI	0.120	0.053	2.192	0.028*	Partial (competitive) mediation	Supported
H_{19}	INT→CBBE→PI	0.052	0.045	1.106	0.269	No mediation	Rejected
H_{20}	CUS→CBBE→PI	0.051	0.054	0.898	0.369	No mediation	Rejected
H_{21}	TRE→CBBE→PI	0.177	0.070	2.590	0.010**	Full mediation	Supported
H_{22}	eWOM→CBBE→PI	0.009	0.011	0.726	0.468	No mediation	Rejected
H_{23}	ENT→CBE→PI	0.055	0.037	1.505	0.132	No mediation	Rejected
H_{24}	INT→CBE→PI	0.004	0.010	0.366	0.714	No mediation	Rejected
H_{25}	CUS→CBE→PI	0.005	0.011	0.398	0.691	No mediation	Rejected
H_{26}	TRE→CBE→PI	-0.003	0.011	0.374	0.709	No mediation	Rejected
H_{27}	eWOM→CBE→PI	0.009	0.011	0.726	0.468	No mediation	Rejected
p<0.05 *. p<0.01 **. p<0.001 ***							

variables must be statistically significant. As outlined in Figure 2 previous section, if both direct and indirect effects are statistically significant, partial mediation; however, if the direct effect is not significant and the indirect effect is statistically significant, there is full mediation (Zhao et al., 2010; Fidanoğlu, 2021: 92). Table 7 shows the results regarding the specific indirect effects in the measurement model established for the Turkish participants.

Table 7 shows that two of the mediating effects in the model are statistically significant. These are the specific indirect effect of CBBE on the effect of the ENT variable on PI (p=0.028) and the specific indirect effect of CBBE on the effect of the TRE variable on PI (p=0.010). Compared with the results in Table 5, since the direct effect of the ENT on PI is statistically significant but negative (β =-0.206), CBBE has a partial (competitive) mediation role in the effect of the ENT on PI. In a similar vein, Table 5 shows that the

Table 8: Results of Indirect Effects in the Structural Model (German Participants)

Hypotheses	Variables	Standardized β coefficient	Standard Error	t value	P value	Mediating Effect	Decision
H_{18}	ENT→CBBE→PI	-0.008	0.039	0.244	0.808	No mediation	Rejected
H_{19}	INT→CBBE→PI	0.344	0.062	5.508	0.000***	Full mediation	Supported
H_{20}	CUS→CBBE→PI	0.076	0.042	1.797	0.073	No mediation	Rejected
H_{21}	TRE→CBBE→PI	0.104	0.047	2.220	0.027*	Full mediation	Supported
H_{22}	eWOM→CBBE→PI	0.092	0.039	2.300	0.022*	Full mediation	Supported
H_{23}	ENT→CBE→PI	-0.006	0.020	0.203	0.839	No mediation	Rejected
H_{24}	INT→CBE→PI	-0.004	0.022	0.219	0.827	No mediation	Rejected
H_{25}	CUS→CBE→PI	0.001	0.008	0.106	0.915	No mediation	Rejected
H_{26}	TRE→CBE→PI	0.000	0.010	0.144	0.885	No mediation	Rejected
H_{27}	eWOM→CBE→PI	-0.005	0.025	0.216	0.829	No mediation	Rejected
p<0.05 *. p<0.01 **. p<0.001 ***							

direct effect of the TRE on PI is not significant, in this case, it is concluded that CBBE has a full mediation in the effect of the TRE on PI. Table 8 shows the results of the specific indirect effects in the measurement model tested for the German participants.

In Table 8, it is seen that three of the mediating effects in the measurement model established for the German participants are significant. Accordingly, the mediating role of CBBE in the effect of the INT on PI (p=0.000), the mediating role of CBBE in the effect of the TRE on PI (p=0.027), and the specific mediating role of CBBE in the effect of the eWOM on PI are statistically significant. Since the direct effects of INT, TRE and eWOM on PI are not statistically significant (see Table 6), it is concluded that CBBE has a full mediation in all three constructs.

CONCLUSION and DISCUSSION

Based on previous researches, this study proposed a conceptual framework that validates the effect of SMMA on PI. This study had three main pain points. The first of these was the direct effect of ENT, INT, CUS, TRE and eWOM in the SMMA on dependent variables (SMMA→PI; SMMA→CBBE and SMMA→CBE). Since the adjusted R^2 values of CBBE, CBE and PI, which are exogenous variables in the structural model, were over 0.20 (Bourini and Bourini; 2016), it was found that the exogenous variables explanation level of the endogenous variables in the model was moderate in terms of linear relationships. Thus, it can be stated that the main structures in the model are explanation level at an acceptable. Accordingly, H6 (ENT→CBBE), H9 (TRE→CBBE), H11 (ENT→CBBE) and H16 (CBBE→PI) were supported in the Turkish sample. In the light of data collected from German participants, H3 (CUS→PI), H7 (INT→CBBE), H9 (TRE→CBBE), H10 (eWOM→CBBE), H11 (ENT→CBE), H12 (INT→CBE), H15 (eWOM→CBE) and H16 (CBBE→PI) were supported. While these findings concurrent with certain studies in the literature, they contradict some of the previous researches. For example, supporting the H11 (ENT→CBBE) for both samples is consistent with the findings of the study conducted by Yadav and Rahman (2017). Similarly, supporting the H16 (CBBE→PI) for both samples is consistent with Karman's (2015) findings. The second research question was whether CBBE had a mediating role in the effect of the variables (ENT, INT, CUS, TRE and eWOM) in the SMMA structure on PI. Accordingly, H18 (ENT→CBBE→PI) and H21 (TRE→CBBE→PI) were supported for the Turkish sample, and it was determined that CBBE had a partial (competitive) mediation role in the relationship between ENT and PI and a full mediation in the relationship between TRE and PI. On the other hand, H19 (INT→CBBE→PI), H21 (TRE→CBBE→PI) and H22 (eWOM→CBBE→PI) were supported, for the German sample. Accordingly, CBBE has a full mediation in the effect of INT, TRE and eWOM on PI. Hypothesis results regarding the mediating role of CBBE are in concurrent with couple of the previous studies (Schivinski and Dabrowski, 2013; Arli, 2017). The third question of the research was whether CBE had a mediating role as a concept that is still untouched in the literature. Although Choedon and Lee (2020) reported that CBE was a mediator in the relationship between SMMA and PI, within the scope of this study, it was found that the mediating role of CBE was not significant in both samples. Finally, the structural measurement model of this research is theoretically compatible with the S-O-R model. Because SMMA, which is used as a Stimulus

(S) by brands, drives consumer behavior at emotional, attitudinal (O) and behavioral levels (R).

In conclusion, one of the contributions of this study to the literature is the investigation of the social media marketing activities of Netflix, a SVOD platform, although electronic device or luxury fashion brands are generally examined in the previous researches. Because consumers' attitudes towards such enterprises and online platforms may differ compared to luxury fashion brands. On the other hand, the difference in the result of H3 (CUS→PI) for the two samples may offer insight. This difference between the two samples can be explained, for example, by individualism which is considered as one of the cultural dimensions by Hofstede (1980). Because, while Türkiye's score in the individualism is 37, Germany's score is 67 (Hofstede Insights, 2022). Thus, researchers may focus on cultural patterns in comparative studies to be conducted in the following years. Future researches may consider social media content related to the product or brand within the scope of UGC.

It was concluded that consumer attitudes may change negatively as the humor level of social media content increases in both samples (H1). On this basis, it is recommended that marketing practitioners reduce the number of entertainment-based content to increase purchase intention. In addition, global brands operating in the digital market should attach more importance than ever to the consumer profile of the relevant country while conducting their social media marketing activities. Finally, it is suggested that local (boutique) brands that use social media intensively day by day should also create customized offers. Since customized offers are often driven by algorithms whose psychographic elements can be ignored, it is recommended that such local brands also consider marketing research to create brand awareness.

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The Role of Job Crafting and Job Engagement in The Effect of Organizational Commitment on Job Performance

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ABSTRACT

In this study, it is aimed to determine the effect of organizational commitment on job performance, job engagement and job crafting, and to test whether there is a mediating effect of job crafting and job engagement in the interaction between organizational commitment and job performance, with hypotheses based on theoretical grounds. In this study, a quantitative method was used as a research approach. This study was conducted with data collected from 512 employees in an institution operating in the public sector. As a result of the research, it has been revealed that organizational commitment has a positive effect on job performance. It has been observed that organizational commitment affects job performance in the same direction and job crafting plays a partial mediator role in this effect. In addition, the role of job engagement between organizational commitment and job performance was examined. As a result of this analysis, job engagement plays a partial mediator role between these two variables. In the context of all these results, it has been determined that job crafting and job engagement are effective mediating variables between organizational commitment and job performance.

Keywords: Organizational commitment, job performance, job crafting, job engagement, mediator role.

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INTRODUCTION

One of the main purposes of businesses is to ensure their sustainability. To succeed in this goal, businesses that want to have a competitive advantage in today's conditions where competition is high, focus on moving their business performance to a better point by encouraging employees to use their talents at the highest level and increasing the institutional motivation and willingness. In short, creating a workplace culture for employees, making the necessary improvements, redesigning their jobs, and similar managerial practices are always carried out to increase performance.

Considering the precursors of performance, organizational commitment, which expresses the state of employees not thinking of leaving the organization, stands out as a fundamental factor, and in this context, it becomes important to show the effectiveness of institutional motivation on work performance. Although there are studies discussing the existence of this effect, it can be stated that this relationship cannot be only one-way and linear in organizations that are living and developing systems, and that different behavioral variables will indirectly contribute to this interaction. In this context, it is thought that job crafting and employment will have a mediating role in this interaction.

In this context, this research focuses to identify the impact of organizational commitment on job performance. Moreover, it is searched for a mediating role of job crafting and job engagement on organizational commitment and job performance, with hypotheses based on theoretical grounds.

CONCEPTUAL FRAMEWORK AND HYPOTHESIS

Job Performance

Job performance is a substantial link to company performance success (Kappagoda et al., 2014) and is expressed as the attitude of the employee to make efforts and contribute to the achievement of business goals (Campbell & Wiernik, 2015).

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Businesses: they prefer employees who are dedicated to the organization, have skills and competence, and complete their tasks on time, that is, who create a competitive advantage. The efforts and behaviors of the employees in the job roles that benefit the business create job performance (Çelebi, 2019). Job performance can be explained as the fulfillment of the issues in the job descriptions of the employee and the provision of the necessary requirements related to the job by the employee. In general, job performance is classified as task and contextual performance.

Task performance addresses the requirements in the job description, referring to the jobs included in the organization's reward system, including the contribution of the employee to the firm's performance (Williams & Karau, 1991). In this context, Motowidlo and Scotter (1994) define task performance as necessary results and behaviors that are crucial for organizational targets and are valid for every job.

Contextual performance has emerged because task performance not being completely sufficient to explain job performance. Contextual performance does not always have a direct relation to the content of job descriptions. It is the internal state that supports the achievement of the expected output and success by doing more tasks. In addition, contextual performance is a phenomenon that indirectly benefits the performance of the organization by facilitating task performance, which consists of attitudes that add value the psychological, organizational, and social environment (Borman, 2004: 238).

What is important for organizations, as mentioned before, is to maximize business results, ensure sustainability, and maximize employee performance. To achieve these phenomena, performance antecedents need to be determined and evaluated. The idea of organizational commitment which is thought to affect the performance of employees is included in this research.

Organizational Commitment

The organizational commitment may be described as the general frame to which workers internalize the aims and norms of the organizations they are involved in, their emotional commitment to their organizations, and their willingness to serve their organizations (Allen & Meyer, 1996: 252).

The relationship between job performance and organizational commitment has been confirmed in some studies, but the effects of these variables are different. According to Loan (2020), organizational commitment possesses important effects on employee performance in the workplace. To evaluate the link between job performance and organizational commitment positively influencing job performance and being regarded as one of the precursors of job performance, hypothesis one has been established and explained.

$H_{1.}$ Organizational commitment has a same direction impact on job performance.

Important phenomenon having an influence on the linkage between job performance and organizational commitment is the worker's job crafting ability.

Job Crafting

Job crafting might be explained with the theoretical background of job design theory and the job demands-resources model. In 2001, Wrzesniewski and Dutton mention that the workers' role in influencing the tasks and social relations that make up a "job" is minimal in traditional job design. However, even in the most limited jobs, workers can have an effect on the essence of the work. Theoretically, in this context, it can be stated that the idea of job crafting begins with job design theory. Hackman and Oldham (1976) based the job design measure the worker's psychological state and motivation in their research. It might also be stated that the employee's own job design can provide employee motivation, job performance and job satisfaction. Moreover, it is regarded that it should be developed to include motivators that will encourage the responsibility, success, competence, and development of the employee (Oldham & Fried, 2016: 21). This approach can be explained by job design theory. In job design theory, it has been important to highlight personal differences are an important part of motivation (Campion & McClelland, 1993). In 2001, Wrzesniewski and Dutton argue that doing a job is deeply related to the effort of shaping the cognitive and physical task boundaries. In this context, it is thought that job crafting is another way to traditional job design techniques with a more inclusive perspective with the qualifications of changing the boundaries of social relations, the importance and meaning of the job along with the job bounds of the workers.

Job crafting may also be definition by the primary assumption of the job demands-resources model. Job demands are the organizational and social acquisitions of employees in their jobs because of their psychological and physical conditions, whereas job resources are

the organizational, social, physical, and psychological aspects of the functionally successful results of jobs. Job resources, which consider physiological costs and psychological such as the role quality of the employee, task level, decision-making process, and task identity, include all stages from the organization level to the organization of the job (Bakker et al., 2004; Boyd et al., 2019; Vegchel et al., 2005).

Task crafting is the reorganization of the worker's task activities. Relational crafting is the formatting made via social interactions in the workplace. Cognitive crafting, on the other hand, is explained as a mental action that is related to how the employee perceives his job and that contributes to business life and makes him, and his work feel valuable.

Job crafting might result in important outcomes for the engagement and performance quality of employees. Within the framework of these explanations, the related studies are generally about to the results of job crafting. Qi, Li and Zhang's (2014) results of research showed that affective commitment was linked to job crafting and also Hu and friends' (2020) research consequences showed that job crafting was positively linked to commitment human resources practices.

In this context, job crafting assists workers to be more motivated in their workplaces with their organizational commitment. For this reason, organizational commitment has been evaluated as a significant element in determining the job crafting abilities of human resources. Accordingly, hypothesis two was formed to reveal the linkage between job crafting and organizational commitment.

H_2. Organizational commitment has a same direct on job crafting.

While job simplification and classical job design approaches (job enrichment, job rotation, flexible working, job enlargement, etc.) occur with the decisions and directions taken by the senior management to increase the performance and motivation of the employees, job crafting includes an arrangement starting from the bottom up from the employee. Accordingly, this model has been considered as one of the theories supporting the hypothesis that job crafting possesses a positive impact on job performance.

In recent years, the development of a detailed understanding of how employees change and shape their jobs on their own to improve their job performance and well-being in the workplace has led to the consideration of job crafting by researchers. In particular, it has been observed that this concept has revealed results in the same direction as job performance and job crafting (Bakker et al., 2012; Lee & Lee, 2018). Create on the conceptual reasons explained hypothesis three was formed.

H_3. Job crafting has the same direction and impact on job performance.

In 2014, according to Qi and friends' research, emotional commitment possesses a positive impact on job crafting. It is obvious that workers with relatively strong organizational commitment are more loyal to their organizations. In addition, they spend more effort to add to the aims of the company and they recognize more with the organizational values. They tend to work harder than employees with low organizational commitment. Grant and friends discuss in 2008 that organizational commitment and emotional commitment strengthen workers to set higher aims for themselves and also to strive to develop their performance. In 2001, in accordance with Wrzesniewski and Dutton workers shape their jobs because they perceive that their behaviors match their wishes, targets, or responsibilities within the organization. Therefore, workers who have a high level of emotional commitment to their organizations are more probably to do their works effectively (Qi et al., 2014). Employees who identify themselves through the values and aims of the firm are likely to demonstrate more performance to proactively invest in organizational activities. In this context, workers with strong organizational commitment are more probable to take initiative and reveal job crafting behavior. Hypothesis 4 has been created regarding the direction of this indirect effect when there is a mediating variable that motivates the employee to exhibit a positive attitude in the linkage among job performance and organizational commitment.

H_4. Job crafting has a mediating role in the impact of organizational commitment on job performance.

Another variable that is addressed which has an impact in the context of the linkage among job performance and organizational commitment is job engagement.

Job Engagement

Job engagement has a direct relation to the identity of the group or company in which employees give their energies in cognitive, emotional, and physical domains to meet their role expectations (Tyler & Blader, 2003). Being employed, which is a continuous situation depending on the passion and commitment that workers feel towards

their work (Bakker & Demerouti, 2008), is the emotional immersion of employees in their roles at work by providing their energy and effort to the work. (Kahn, 1990).

Job engagement is explained by the psychological conditions theory. Kahn (1990) created two concepts to explain how individuals balance themselves in their roles, namely, individual withdrawal, distancing, and individual dedication and dedication. These indicate the one's need for self-expression and dedication to work. These concepts are characterized by features such as dedication and hard work (Schaufeli & Bakker, 2004; Walden et al., 2017). Within the dimension of being vigor, the employee is characterized as physically energetic, emotionally strong, and diligent, with a high energy level and mentally vigorous, displaying a voluntary, combative attitude. The dimension of dedication includes valuing the work done, feeling that the work is important, being proud of the work, trying to prove oneself, being able to challenge, struggling and working enthusiastically. The dimension of absorption is explained as the workers full concentration on their job, their complete commitment to their job, not understanding how time passes in such a situation, being happy while dealing with his job, and having difficulty quitting his job.

The model of job engagement as doing the job with high energy and high performance and focusing on his job with his own will and effort. In this context, work engagement signifies the members positive behaviors at work. Likewise, organizational commitment is a concept that supports a constructive notion for the worker. Specifically, workers with a higher level of emotional commitment are more probable to be energetic and contributive. The concept that organizational commitment can influence job engagement. Hypothesis 5 was formulated to inspect the linkage among job engagement and organizational commitment.

H_5. Organizational commitment has a same direction impact on job engagement.

There may be some reasons why employees with relatively high job engagement perform better than those without. The most convincing one can be assumed that employees generally feel positive emotions. Xanthopoulou and friends in 2009 argued that these personal resources are utilized to deal with job demands and eventually to perform well. Accordingly, studies showing the presence of a positive linkage between job engagement and performance are increasing day by day (Bakker et al., 2012). Create on the conceptual reasons explained hypothesis six was formed.

H_6. Job engagement has a same direction impact on job performance.

When workers are given resources at job, they can be more dedicated to their daily activities by connecting more deeply to their role performances (Kahn, 1990), and they can experience a feeling of belonging to the institution more (Schaufeli & Bakker, 2004). Therefore, under the theoretical umbrella of Hypothesis 5 and Hypothesis 6, Hypothesis 7 was created to study the mediating role of job engagement in the linkage among job performance and organizational commitment.

H7. Job engagement has a mediating role in the impact of organizational commitment on job performance.

In Figure 1, the study model within the structure of the hypotheses described above is shown.

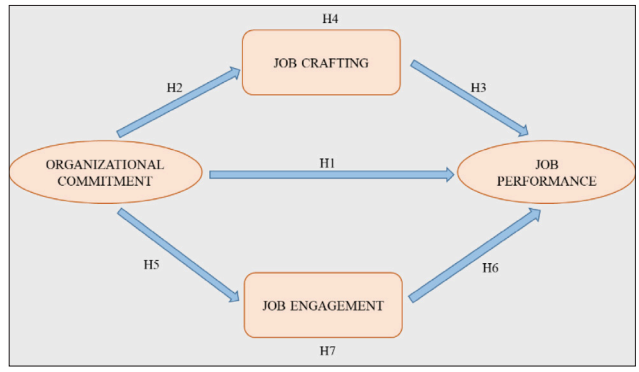

Figure 1: Study Model

METHOD

Sample

The study data gathered from 512 white colour employees in an institution operating in the transport sector of public sector. Public workers are groups that may vary with regard to their job performance in comparison to the private sector.

The universe of the research was determined as active workers. In this framework, the universe is infinite. Özdamar (2003) emphasized that if the universe is infinite, the number of samples will be sufficient when the sample is equal to and/or larger than 384. Therefore, it is adequate.

The data of the research was applied with a questionnaire of 46 questions on the basis that the participants voluntarily answered. These surveys were conducted both face-to-face and online. 49.7% (304) of the participants in the study were male and 34%

(208) were female. Moreover, 0.2% of the participants have primary or secondary school degree, 4.2% has a high school degree, 6.5% associate degree, 56.7% have undergraduate and 32.1% have postgraduate education.

The data analyzed through using in the program of SPSS and Smart PLS package program. In this framework, reliability, validity and hypotheses were tested in the Smart PLS program, and the SPSS program was used for correlation and frequency analysis.

Measures

Job Performance Scale

Two different scales were used to measure job performance.

Task performance scale: The scale adapted from Kirkman and Rosen (1999) by Sigler and Pearson (2000). The scale adapted into Turkish by Çelebi (2019) was used. The scale has one-dimensional structure consisting of 4 items.

Contextual Performance Scale: To measure contextual performance, the organizational citizenship scale developed by Fox and Spector (2011). The scale adapted to Turkish by Çelebi (2019) was used. The scale one-dimensional structure consisting of 10 items.

Organizational Commitment Scale

In 1993, Jaworski and Kohli developed organizational commitment scale. The scale adapted to Turkish by Şeşen (2010). The scale has one-dimensional structure consisting of 5 items.

Job Crafting Scale

It developed job crafting scale by Wrzesniewski and Dutton (2001). The scale adapted into Turkish by Yavuz and Artan (2019), was used. The 27-item scale consists of 7-item task shaping, 9-item cognitive shaping and 11-item relational formatting dimensions.

Job Engagement Scale

The "Utrecht Job Engagement to Work Inventory Very Short Version (UWES-3)", which includes 3 statements argued by Schaufeli et al. (2006). The scale adapted into Turkish by Güler and friends (2019), was used. The scale consists of five-point likert type and 3 items.

Research Reliability and Validity

Reliability, convergent, and divergent validity analyses of each scale of research were conducted using the Smart PLS program. In all these processes, the values put forward by Fornell and Larcker (1981) were taken into account. In this context, it was monitored whether the Cronbach Alpha value of the scales used in the research was equal to or greater than 70%. In addition, factor loadings of each of the items of the scales were determined to be equal to or higher than 40%. In addition, it was checked whether the average variance value (AVE) explained for discriminant validity was equal to or greater than 50% (Hair et al., 2017). It seen that Cronbach's Alpha, Convergent validity (CR) and factor values coefficients in the first evaluation were at the accepted levels for the four scales considered in the study (Fornell & Larcker, 1981). However, due to the fact that the explained average variance values (AVE) were below the acceptable value, intervention was made to remove certain questions from the task crafting and relational crafting sub-dimensions of the job crafting scale, respectively. In this context, the question TP1 (I change the content and/or scope of my tasks to make my job interesting for myself) was removed from the task crafting sub-dimension. From the relational crafting sub-dimension, RC6 (I change the communication method I use when I need to establish a closer relationship with others at work), RC8 (I try to get to know people well at work), RC9 (I organize special events at work), and RC10 (I usually take breaks while working with others to improve my relationships). The scale was not necessary to delete any items from the other variables. In our research, had a result that the internal consistency of the scales was ensured (Table 1).

In Table 1, the values obtained by subtracting the items suggested by the program from the dimensions of task crafting and relational crafting provided the model's goodness of fit values. The findings clearly indicate that the reliability (Cronbach's Alpha, association (CR) and explained mean-variance values (AVE)) of the scales used in the study are at acceptable levels (Hair at al., 2017). In addition, the variables' discriminant validity used in the research was examined by using cross-loads and HTMT criteria (Fornell & Larcker, 1981). It is seen that discriminant validity is provided in this framework. Table 2 shows HTMT values.

The HTMT coefficients seen in Table 2 show value; theoretically, it should be below 0.90 for close concepts and 0.85 for distant concepts. In this framework, the HTMT coefficients in Table 2 are at an acceptable level since they are calculated below the threshold value. Variables' model fit values used in the study were analyzed (Table 3).

Table 1: Internal Consistency Results

Variables		Expressions	Factor	Cronbach Alfa	CR	AVE
JC	TC	2	0.660	0.867	0.866	0.520
		3	0.649			
		4	0.732			
		5	0.779			
		6	0.694			
		7	0.800			
	RC	1	0.757	0.861	0.859	0.505
		2	0.722			
		3	0.721			
		4	0.695			
		5	0.661			
		7	0.703			
		11	0.757			
	CC	1	0.760	0.910	0.909	0.527
		2	0.803			
		3	0.689			
		4	0.758			
		5	0.736			
		6	0.743			
		7	0.676			
		8	0.674			
		9	0.682			
JP	TP	1	0.663	0.821	0.820	0.536
		2	0.687			
		3	0.701			
		4	0.861			
	CP	1	0.726	0.912	0.913	0.515
		2	0.636			
		3	0.732			
		4	0.611			
		5	0.656			
		6	0.678			
		7	0.650			
		8	0.769			
		9	0.833			
		10	0.846			
JE		1	0.771	0.756	0.760	0.514
2		0.698				
3		0.679				
OC		1	0.728	0.905	0.906	0.659
2		0.769				
3		0.860				
4		0.812				
5		0.882				

Job Crafting (JC), Task Crafting (TC), Relational Crafting (RC), Cognitive Crafting (CC), Job Performance (JP), Task Performance (GP), Contextual Performance (CP), Job Engagement (JE), Organizational Commitment (OC)

Table 2: HTMT Coefficients of Discriminant Validity Results

Variables	CP	CC	TC	TP	OC	RC
CP						
CC	0.568					
TC	0.573	0.708				
TP	0.653	0.631	0.676			
OC	0.384	0.768	0.499	0.421		
RC	0.618	0.740	0.844	0.643	0.572	
İT	0.176	0.287	0.318	0.227	0.233	0.315

As seen in Table 3, there is not any overlapping item in the variables considered in the research (VIF<5). In other words, it has been observed that there is no overlapping substance. In addition, variables had data consistency (≥0.70), an acceptable good fit (<0.08), a nonsignificant difference between correlation coefficients and experimental correlation coefficients (d_ULS and d_G; p>0.05), and normed fit. index (NFI: 0.910). In this context, the observation of all fit values at acceptable levels indicates that the validity of the study is sufficient (Hair et al., 2017). In addition, in order to examine the discriminant validity within the extent of the research, the correlation between the factors and the square root of the AVE each of the factors that were compared (Fornell & Larcker, 1981). According to the results of this analysis, it was observed that the square root of the AVE values of the variables used in the study was greater than the correlation values between the factors. In this context, it is given in Table 4 that the correlation coefficients is smaller than the square root of the AVE value . Table 4 shows that the variables' square root AVE values used in the research are very high and well differentiated.

RESULTS AND DISCUSSION

The hypotheses created in this research were analyzed in the statistical program of Smart PLS. In this context, the explanation ratios between the variables used in the study (R^2); effect size f^2 and estimation coefficient (Q^2) values were analyzed (Hair et al., 2017). The results of the analysis are presented in Table 5 and Table 6.

As seen in Table 5, when the R^2 values obtained in the study model are examined, it is seen that organizational commitment explains job crafting from the relational crafting sub-dimension 33%, from the cognitive crafting dimension 58%, and from the task crafting dimension. Again, Table 5 also demonstrated that the working model has predictive capacity of job crafting, job performance and job engagement variables. In Table 6, the value of the effect size f^2 is examined. Looking at the outcomes of the research, it was observed that the medium effect size of job crafting for job performance and medium level effect size of organizational commitment for job crafting.

In the study, in order to look at the mediation effect, first of all, all sub-dimensions of job engagement and job crafting were extracted from the model. In other words, the impact of organizational commitment on job performance was examined. In this impact, the effect of OC on CP (β=0.308) and the effect of OC on TP (β=0.421) was observed (Table 7). Then, job performance was removed from the model and replaced with job crafting sub-dimensions. The effect of OC on TC (β=0.771), OC on RC (β=0.501), OC on CC (β=0.576). Then, an organizational commitment was removed from the model and replaced by job performance. In this framework, the effect of CC on CP (β=0.238), CC on TP (β=0.264), TC on CP (β= 0.135), TC on TP (β=0.297), RC on CP (β=0.325), RC on TP (β=0.118) was observed. In addition to these, job crafting was removed from working, and organizational commitment and job performance were replaced with job engagement. In this context, the effect of OC on JE was observed (β=0.231). Finally, an organizational commitment was removed from the model and the effect of being engagement on job performance was examined. As a result of this analysis, the effect of JE on TP (β=0.183) and JE on CP (β=0.238) were observed.

As seen in Table 7, the hypotheses 1, 2, 3, 5 and 6 of the study were supported. In the second stage of the study, firstly, the mediating role of job crafting in the effect of organizational commitment on job performance was analyzed. In the analysis, Zhao and friends (2010) method was taken into account for the mediating effect. The VAF value was calculated.

In this context, VAF values were calculated considering the values in Table 7. Calculated VAF values are demonstrated in Table 8.

Table 3: Overlapping Item and Model Fit Values Results

Variables		Factor Loading	VIF	rho_A	SRMR	d-ULS	d_G	NFI
JC	TC	2	1.728	0.870	0.053	2.703	1.155	**0.910**
		3	2.069					
		4	2.355					
		5	2.431					
		6	1.840					
		7	1.729					
	RC	1	1.673	0.860				
		2	1.402					
		3	1.815					
		4	2.026					
		5	2.534					
		7	2.623					
		11	1.673					
	CC	I	1.629	0.911				
		2	2.093					
		3	2.094					
		4	2.991					
		5	2.689					
		6	1.989					
		7	2.172					
		8	2.442					
		9	1.673					
JP	TP	1	1.562	0.831				
		2	1.961					
		3	1.951					
		4	1.715					
	CP	1	2.336	0.918				
		2	1.738					
		3	2.633					
		4	1.673					
		5	1.952					
		6	1.855					
		7	1.999					
		8	2.560					
		9	2.777					
		10	2.874					
JE		1	2.064					
		2	1.979	0.763				
		3	1.258					
OC		1	1.875	0.909				
		2	2.517					
		3	3.984					
		4	3.049					
		5	2.327					

Table 4: Convergent Validity Results

Variables		JC			OC	JE	JP	
		TC	RC	CC			TP	CP
JC	TC	**(0.721)**	.608**	.608**	.430**	.240**	.556**	.508**
	RC	.608**	**(0.710)**	.705**	.704**	.240**	.536**	.503**
	CC	.608**	.705**	**(0.779)**	.703**	.240**	.536**	.503**
OC		.430**	.703**	.703**	**(0.811)**	.195**	.363**	.350**
JE		.240**	.240**	.240**	.195**	**(0.480)**	.173**	.140**
JP	TP	0.536	.556**	.536**	.363**	.173**	**(0.732)**	.557**
	CP	.508**	.503**	.503**	.350**	.140**	.557**	**(0.717)**

Table 5: Research Model Coefficients

	Variable	R^2	Q^2
JC	RC	0.331	0.131
	CC	0.589	0.282
	TC	0.250	0.111
JP	TP	0.520	0.258
	CP	0.420	0.200
OC			
JE		0.054	0.024

Table 6: Research Model Effect Size Coefficients

Variable		CP	CC	TB	TP	OC	RC	JE
JC	CC	0.044			0.062			
	TC	0.206			0.076			
	RC	0.052			0.040			
TP	CP		0.001	0.001				
	TP							
OC		0.009	1.430	0.333	0.010		0.495	0.057
JE		0.002			0.000			

Table 7: Research Model Effect Coefficients

Variable	Standardized β	Standard Deviation	t value	p	Indirect Effect
OC->CP	0.388	0.051	7.660	0.000	0.501
OC -> TP	0.421	0.049	8.637	0.000	0.532
OC-> TC	0.771	0.032	24.412	0.000	
OC-> RC	0.501	0.055	9.130	0.000	
OC-> CC	0.576	0.043	13.334	0.000	
CC -> CP	0.238	0.083	2.846	0.005	
CC -> TP	0.264	0.080	3.285	0.001	
TC -> CP	0.135	0.127	1.063	0.018	
TC -> TP	0.397	0.114	3.480	0.001	
RC -> CP	0.325	0.110	2.945	0.003	
RC -> TP	0.118	0.126	0.934	0.041	
OC -> JE	0.231	0.054	4.309	0.001	
JE -> TP	0.183	0.052	3.490	0.001	0.122
JE -> CP	0.238	0.053	4.446	0.000	0.134

Table 8: Research Model VAF Results

Variables	Total Effect	Indirect Effect	Inderect Effect + Total Effect	VAF
OC. -> CC -> CP	0.238	0.501	0.739	0.678
OC -> CC ->TP	0.264	0.532	0.796	0.668
OC-> TC -> CP	0.135	0.501	0.636	0.788
OC -> TC-> TP	0.397	0.532	0.929	0.573
OC-> RC-> CP	0.325	0.501	0.826	0.607
OC -> RC -> TP	0.118	0.532	0.65	0.818
OC -> JE > TP	0.183	0.122	0.305	0.400
OC-> JE -> CP	0.238	0.134	0.372	0.360

As it can be seen in Table 8, there is a mediating impact on the effect of organizational commitment on job performance. When we look at the details in terms of its sub-dimensions, while there is a full mediator effect in the Organizational Commitment -> Relational Crafting -> Task Performance model; a partial mediation effect was observed in other models. Again, within the scope of the study, it was seen that being hired had a mediating effect on the effect of organizational commitment on job performance. Within the scope of the sub-dimensions of this effect, it was observed that there was a partial mediating effect in both dimensions. In this context, the 4th and 7th hypotheses of the study were supported. All these findings are shown in Figure 2.

As seen in Figure 2, all hypotheses of the study were supported. In this context, the results of the study are supported by the literature. For example, in the study conducted by Becton et al. (2009), it was found that organizational commitment is effective on job performance. In the aforementioned study, it has been observed that the increase/decrease in organizational commitment increases/decreases job performance. In another study, Zhong and others (2016) drew attention

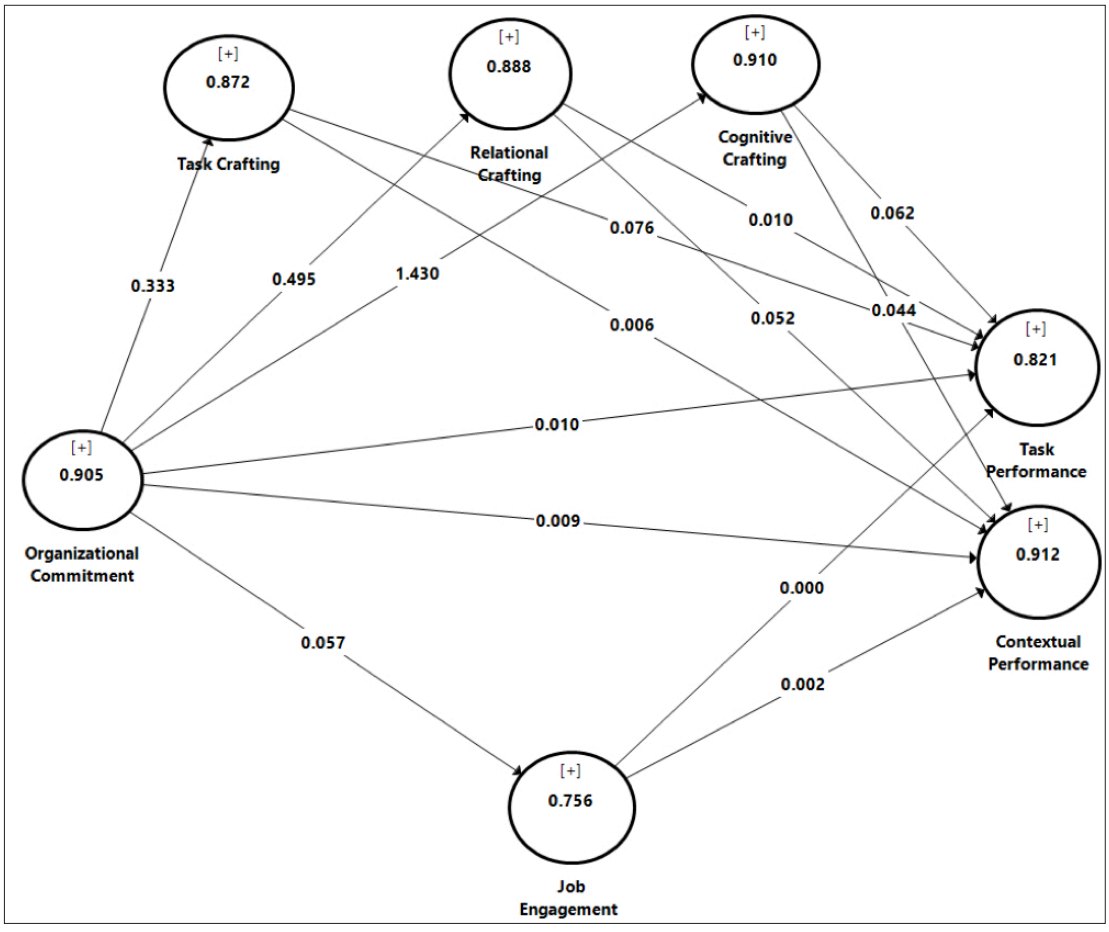

Figure 2: Structural Equation Model

to the cause-effect linkage among organizational commitment and job performance. Li and friends (2020) investigated the effect between job crafting and job performance. In this research, it has been observed that job crafting is effective in the same direction as job performance. Also observed in the literature, Bal and De Lange (2014) and Beck and Shen (2018) argued that job performance is affected by organizational commitment and this effect may play a role in job engagement. It is seen that these studies observed in the literature are in the same direction with the findings of this study.

CONCLUSION and SUGGESTIONS

This research was conducted to examine the impacts of job crafting and job engagement on the relationship between organizational commitment and job performance. In this context, first of all, the role of job crafting in the association between organizational commitment and job performance was inspected. In such a context, it was observed that organizational commitment influences job performance in the same way and job crafting plays a partial mediator role in this effect. As organizational commitment rises, job performance increases. When job crafting is added to this relationship, the effect is even higher. These results are directly proportional to the studies researched by the literature. However, in this research, the effect of job crafting, which is among the important concepts of recent times, on the impact of organizational commitment on job performance was not investigated. Among the results of this study that it has been seen that job crafting is the full tool of this effect within the context of relational crafting. When this result is added between organizational commitment and job performance, it can measure the whole relationship. This result fills the important gap in this context in the literature. Moreover, in this research, the role of job engagement between organizational commitment and job performance was examined. As a result of this analysis, job satisfaction plays a partial mediator role between these two variables. In other words, when job engagement is added to the impact of organizational commitment on job performance, this effect increases or decreases. In the context of all these results, it has been determined that job crafting and job engagement are effective mediating variables between organizational commitment and job performance. It has been revealed that researchers should realize the significance of job crafting and job engagement in the effect between these two variables.

The conclusions of the research can be evaluated in the context of sub-dimensions: In this context, it is observed that the mediating effect of task crafting between organizational commitment and task performance is higher than the contextual performance. In addition, it is observed that the mediating effect of relational crafting between organizational commitment and contextual performance is higher than task performance. On the other hand, it has been observed that the mediating effect of cognitive crafting, both contextual and task performances, is close to each other. In this case, it is considered that enabling employees with high organizational commitment to use their task crafting skills more in order to increase their task performance will be beneficial in terms of affecting the performance of the organization. However, employees with high organizational commitment; It may indirectly affect job performance with extra role behaviors that are not included in the job description but on a voluntary basis. In addition, the mediating effect of the relational crafting made by employees by determining the boundaries of their relations with each other in the contextual performance relationship may be high in this effect. Due to the high degree of this degree, managers' directing employees by correctly evaluating the relational boundaries can also positively affect the performance of the organization.

Considering the application areas; It was concluded that organizational commitment antecedent variable in order to increase job performance and the way the employees shape their own jobs and the level of their job engagement positively affect the aforementioned relationship. Since this result causes the employees to make their work more suitable for them and to stick to the job, monitoring and measuring the trends developing in this direction by the organization management may be effective in achieving better results. In addition, with such approaches and orientations, information flow will be provided from the lowest level to the highest level, especially from the managers and human resources units, on the restructuring of roles and duties according to the employees. It is evaluated that job crafting and job engagement tendencies can play important roles as indicators.

According to all results, the managers of the organization should observe the employees who have the ability to shape the job and should encourage and guide the employees with the shaping methods they make.

However, if the job shaping done by an employee is a beneficial practice for the entire organization, managers can ensure that all employees of the organization adopt this practice. Thus, they contribute positively to the organizational commitment of the employees.

In addition to these results, our study also has some limitations. First of all, the findings are limited to the characteristics of the sample. In addition, the fact that it was studied with cross-sectional data and the limitations of social desirability should be considered in the evaluation of the results.

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Drivers and Barriers in the Diversification of Airline Business Models in Turkey (1980-2020): An Institutional Logic Perspective

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ABSTRACT

The primary objective of this study is to explore the diversification of airline business models in Turkey in four decades and show the reasons and logic behind the diversification from the institutional logic perspective. For this purpose, airline business models were examined, and critical events in the organizational field were explored based on secondary data. The case study research was conducted to explore the diversifications of the business model within institutional logic. The gathered data were examined with the content analysis method. The results show that multiple institutional logic (state and commercial logic) in the field can pave the way or prevent diversifying airline business models. Multiple logics shape the regulations and approaches of the state and other organizations in the field, and these changes may play a role as a barrier or driver for diversification. Each barrier and driver may affect each airline's business model differently. This study contributes to business models and institutional logics literature by providing evidence of the effect of the pattern of approaches of the actors on the airline business models and by showing the relations between these approaches and institutional logic.

Keywords: Aviation History, Multiple Institutional Logics, Airline Business Models Diversification, Multiple Case Studies.

JEL Classification Codes: L2, L93, L98, M10

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INTRODUCTION

Much of the academic discourse surrounding business models have assumed an increasing interest in business models over the last 20 years (Foss & Saebi, 2017). Scholars have discussed the meaning of a business model widely, the relations with the strategy (Massa et al., 2017), and the components of the business models (Osterwalder & Pigneur, 2010). There are common themes among papers regarding business models, such as accepting the business models as a new unit of analysis (Zott et al., 2011). As highlighted in the literature (Massa et al., 2017), the business model topic is essential for practice, theory, and policy, and it is gained attention from scholars and practitioners (Foss & Saebi, 2017). On the other hand, in the institutional logic theory literature, it has been shown that organizations respond to institutional environments in different ways (Greenwood et al., 2010), and this point of view extends the discussion to greater depths into the heterogeneity in business models (Laasch, 2018; Ocasio & Radoynovska, 2016). It is observed that scholars have analyzed hybridity (Daft & Albers, 2013; Klophaus et al., 2012), and changes have been discussed by showing the cases (Lange et al., 2015). Although there is increasing interest in this topic, it has yet to provide empirical evidence for the relation between the diversification of the airline business models in the organization field and institutional logic theory. Toward that end, this study critically reviews the last four decades of airline business models in Turkey and explores relations between the activities of the actors and the theory. In that sense, a fundamental question in this paper is: "How have/haven't airline business models diversified in Turkey between 1983-2020 within institutional logic(s)?". An essential contribution of this paper to the airline business model and institutional logic literature is showing the patterns of the actors' approaches embedded in multiple institutional logics that explain the diversification of the business models. Furthermore, this study provides a more profound understanding by examining the airline business model over four decades and showing the relation with multiple logics.

In the rest of this paper, the concept of institutional logic and debates on the business model and the organizational field are discussed by referring to the related literature, followed by the method, findings, discussion, and results.

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THEORETICAL FRAMEWORK

Institutional Logic

The literature states that the existing institutional logics determines the forms or practices of organizations in the organizational field. The view that organizations are influenced by multiple institutional logics is an indisputable fact today (Besharov & Smith, 2014; Laasch, 2018; Önder & Üsdiken, 2016; Thornton et al., 2012a; Thornton & Ocasio, 1999). Alford and Friedland (1985) describe the concept of logic as "a set of practices – behaviors, institutional forms, ideologies – that have a social function and are defended by politically organized interests. Alford and Friedland (1985) also refer to the possibility that actors may not be aware of the prevailing institutional logic in question. Thornton et al. (2012a); (1999) later elaborated on the subject of logic by drawing on the work of Friedland and Alford (1991). The concept of institutional logic, often cited in the literature, is described as "the socially constructed, historical pattern of material practices, assumptions, values, beliefs, and rules by which individuals produce and reproduce their material subsistence, organize time and space, and provide meaning to their social reality"(Thornton et al., 2012a; Thornton & Ocasio, 1999). Institutional logic is built on four basic assumptions, according to Thornton et al. (2012a). The first includes the fundamental assumption that organizations' interests, identities, values, and assumptions are embedded in the extant institutional logic. According to this assumption, institutional logic may create opportunities for organizations and individuals and restrict them simultaneously (Thornton & Ocasio, 2008). This assumption was later conceptualized as an embedded agency. From an institutional logic perspective, the embedded agency has partial will and mobility (Thornton & Ocasio, 1999) and may exhibit behavior influenced by its possibilities (Duman, 2017). The literature underlines the need to define "institutional orders" with different expectations for organizational behavior (Önder & Üsdiken, 2016; Thornton & Ocasio, 2008). Based on the institutional orders cited in the work of Friedland and Alford (1991) as market, state, democracy, family, and religion, Thornton et al. (2012a; 1999) provide conceptualization of logics associated with seven different institutional orders: family, community, religion, state, market, professions, and corporation.

Each institutional order has its own unique but conflicting logic. As mentioned in the work of Lounsbury et al. (2021), Thornton et al. (2012b) share several dimensions for each institutional order, which facilitate understanding the differences and provide governance for the emergence and maintenance of logic. For instance, according to family logic, legitimacy stems from loyalty, and the basis of strategy is increasing family honor. According to community logic, belief in trust and reciprocity are legitimacy sources, and increasing the status and honor of members and practices are the bases of the strategy. On the other hand, for religion logic, the importance of faith sacredness in economy & society is the source of legitimacy, and increasing religious symbolism is the basis of strategy. State logic stems from democratic participation; and the strategy is increasing community good. Market logic stems from sharing price, and the strategy is increasing profit. Another one is the Profession institutional order which stems from personal expertise and increasing personal reputation is it's the primary strategy. Lastly, Corporation logic stems from the market position of firm legitimacy, and increasing the size and diversification of the organization are the main strategies.

These logics play a role in assigning meaning to diversity (Thornton & Ocasio, 2008; Thornton et al., 2012a).

Another assumption of institutional logic is that institutional layouts have tangible and intangible properties (Thornton & Ocasio, 2008). According to institutional logic, institutions develop and change through the influence of tangible and intangible dimensions. Symbolic and cognitive factors and normative ones affect the shaping of actions by intangible elements (Thornton & Ocasio, 2008). The third assumption is the dependency on historical conditions. The assumption states that various factors throughout history have influenced the behaviors of organizations. Therefore, actions are influenced by the prevailing institutional logic in the specific period they occur and should be considered accordingly (Thornton & Ocasio, 2008). The authors note that institutional logic has changed over time and is influenced by internal and external factors. The last assumption is that institutions may provide explanations for multiple levels. For this reason, selecting or combining multiple levels of analysis would provide better explanations for research (Thornton et al., 2012a).

Debate on Business Models and Institutional Logics

As regards the studies on business models influenced by institutional logic, aiming to find out which logics affect the sustainable business model and what characteristics they have, and what is achieved through them, Laasch (2018) found that the institutional logic shapes the homogeneous and heterogeneous value creation logic of organizations and that multiple institutional logics

shapes the sustainable business model. Ocasio and Radoynovska (2016) also assert that existing institutional logics shape organizations' choices and this institutional pluralism provides heterogeneity in business models rather than making them similar. Similarly, Vaskelainen and Münzel (2018) examined the impact of institutional logic on business model shifts in the car-sharing sector in Germany. They found two different business models in the car-sharing industry, and the influence of different institutional logics form these two business models. According to the authors, organizations that offer free travel have the corporation logic, while others that offer travel by stops have the community logic. This study is mainly driven by an attempt to explore how airline business models have diversified in four decades in Turkey and reveal the impact of institutional logic dominating the organizational field on this diversification in the context, questioning the role of institutional logic in the meaning and explanation of the diversification. Indeed, it has also been noted by some researchers that the research literature in the field of organizations examining business models influenced by institutions is very scant, and further research needs to pursue this line of inquiry (Foss & Saebi, 2017). In this respect, this study aims to explore the changes in the regulations, approaches, the factors, and logic behind the diversification.

Organizational Field: Airline Business Models in Turkey Before 1983

The organizational field of this study is civil aviation transportation in Turkey. Civil aviation in Turkey goes back to 1933 with the introduction the Law No. 2186. In the context of this paper, the first business model has emerged with Turkish Airlines' traditional airline business model. At that time, similar to other countries, the airline operations, the primary airline support services (e.g., catering, ground services, fuel oil), and national airports are all managed by the State. As a flag carrier, THY continued (apart from some temporary exceptions) its operations as the representative of Turkey on domestic and scheduled international routes until the 1980s. Although a few of domestic airlines remained in operation until the 1980s, they could not continue their operations to the present day. For instance, it was reported in the press that Hürkuş Airlines was established in 1954 (Hürkuş, 2020). However, it could fly as much as it was permitted. Bursa Airlines was another airline operating on domestic routes besides THY prior to the 1980s. According to press reports, Bursa Airlines was founded in 1977 (Albayrak, 1983) to "fly between the regions where THY cannot have flights or lose money" (Milliyet, 1977). According to a different report, Bursa Airlines was established after THY stopped its flights between Istanbul-Bursa, and thus, civil aviation ceased to be monopolized by THY (Milliyet, 1977). In the same year, it was reported in the newspapers that Bursa Airlines was unable to obtain a flight permit. Then, it is observed that the airline, which managed to obtain the permit later (1977), filed for bankruptcy in 1984 (Hürtürk, 2016).

On the other hand, in 1974, THY established Cyprus Turkish Airlines (KTHY) based in Nicosia, Cyprus, with a 50% partnership share (THY, 2008). This improvement is important in terms of the business model diversification and is the first example of the multi-business model

Table 1. Airline Business Models in Turkey Before 1983

Before the 1980s	Airlines operated for a period	Airlines that ceased to exist**
Airline Business Models in the field	Traditional Airline Business Model (THY-1933-present)	Charter Airline Business Model Anatolian Airlines-1969 Aegean Airlines-1978
	Regional Airline Business Model* Hürkuş-1954-59 KTHY, subsidiary of THY, 1974-2010 Bursa Airlines*-1977-1985	Regional Airline Business Model Karadeniz Airlines, 1980 Toros Airlines-1980 Bergen Aviation-1980 Anadolu Air Transortation, 1980 Doğu Airlines-1980 Güneydoğu Airlines-1980
	Charter Airline Business Model Turkol Airlines, 1979-1982** Northern Cyprus Air Services Ltd|Trans Anatolian Airlines, 1979-1982***	Charter Airline Business Model Uygur Cargo Airlines,-1980*** Anadolu Air Transportation, 1980*** Güney Doğu Airlines, 1980*** Hat International Air Transportation, 1980***

Note: It was created based on the research data and the publications (DPT, 1990; Hürtürk, 2016)

*These airlines operated for a period and then went into bankruptcy.

**These airlines were registered but could not take the permission and/or never offered actual services.

***These airlines were cargo airlines

Table 2. Implementation of the data analysis

Approach through examples	Codes	Category	Theme
Restriction for flying of charters in certain routes, SHY-6A 1984	Barrier	State	State Logic
Respect to 'flag carrier': *"flying between the regions where THY cannot have flights or lose money*	Barrier	Organization	State Logic
Domestic market deregulation, 2003- 2nd Liberalisation	Driver	State	Commercial Logic
Objection to 'flag carrier': Claim on the abuse of a dominant position of THY	Barrier	Organization	Commercial Logic

Note: It was created based on the research data

concept that THY has today. The reason behind the emergence of this regional airline business model was explained as "...KTHY was founded in 1974 with a 50 percent partnership of THY to revive the economic life of Cyprus, which is going through a difficult period" (THY, 2008). In 2000, this partnership ended after THY shares were acquired by Turban Turizm Inc. (KKTC), but soon it began to lose money, and it was announced that the operating license of KTHY was suspended for three months on 21.06.2010 due to its failure to meet the requirements (DGCA, 2010). KTHY also terminated its activities in the same year. An important issue for the period is that airlines were interested in providing services but had yet to start their operations in the past. Some of the airlines that failed to start operations adopted the charter airline business model (Hürtürk, 2016) and others had the regional airline business model (Cumhuriyet, 1980; Hürtürk, 2016) (See Table 1).

The examples above clearly show that THY was only sustainable airline and only airline business model was traditional airline business model of THY for a long time in the field. Considering the emergence of different airline business models in the rest of the world (Button, 2012; Button & Ison, 2008; Cannon, 1985; Efthymiou & Papatheodorou, 2018; Gittell, 2005; Teece, 2010; Vasigh et al., 2018), it can be observed that the business models have emerged and spread earlier than Turkey. The fact that the traditional business model was only an airline business model and business models could only be varied in the 1980s led to analyzing the actors' approaches (e.g., state, organizations) after the liberalization period. Whether the airline's diversification has occurred or not and the factors behind the diversification are analyzed based on the multiple secondary data in this study. Given the developments in the organizational field where the impact of logic is clear, it has become necessary to find out whether the emergence of business models has occurred due to the influence of institutional logic.

METHODOLOGY

The current study aims to reveal the diversification of business models in the organizational field in Turkey and find out how they relate to institutional logic by examining the airlines. The study explores ***"how have/ haven't airline business models been diversified in Turkey since the 1980s within institutional logic(s)".*** Whether or not the reasons to diversify can be explained with the institutional logic constitutes the sub-research question of the study. The case study research was conducted to explore the diversifications of the airline business models within institutional logics. The case study research is a qualitative research design that gathers information from multiple sources, explores single or multiple cases, presents an in-depth understanding of the phenomena and shows the patterns in the context (Creswell & Poth, 2016; Yin, 2018). Secondary data (e.g., interviews with senior executives, news about the airlines and executives, annual reports or press releases of the airlines, authorities' reports and announcements, the decisions of the competition board, articles and books about these airlines or executives) were included in the study to explore the essential events; expressions of the actors regarding the rules, regulations and other issues; influencing factors for the diversification of the business models and changes over the years. Content analysis has been conducted to identify the diversification and reasons for diversification of the business models. The data were reviewed and coded by two different researchers, and categories and themes were extracted from the codes (Yin, 2016), upon which consensus was reached. In this study, the research data were coded based on first-cycle and second-cyle methods suggested by Miles et al. (2014). Firstly, the content of the research data regarding the influencing factors behind the airline business model diversification were coded based on in-vivo coding. Then, extracted codes were grouped to generate categories and pattern codes. Categories and themes reflect the actors and the relations with institutional logic to address the research question.

FINDINGS

Findings reveal that barriers and drivers in the field affect the diversification of the airlines' business models and these barriers and drivers are embedded into two main logics: State Logic and Commercial Logic. Explored codes, categories, and themes were exemplified in Table 2. The state logic views transportation as 'a service to the citizens, and priority is given to the state objectives rather than profit purposes', and airline management is considered a public duty.

Therefore, transportation is considered as the business of the state. By this logic, the state manages the (national) airline, the major airline support services (catering, ground services, fuel oil), and national airports. On the other hand, the commercial logic views 'transportation as 'a commercial activity, profit is essential, the airline is considered as a commercial business not a public institution', and a commercial perspective of management is adopted. In understanding the diversity of airline business models, grasping the role of institutional logics in the organizational field is critical, which is also essential to reveal any isomorphism among business models. Table 3 shows the differences based on the categories to understand these institutional logics better.

As presented in Table 3, while the source of legitimacy of the state logic is compliance with legal regulations, the source of legitimacy in the commercial logic is the provision of sustainable services by ensuring low costs and high returns at the maximum level. With the state logic, legal regulations are a source of authority, while commercial logic dictates market rules. While the presentation of air transport as a public service from the perspective of airlines points to the state logic, the presentation of air transport with commercial expectation is also a mission determined by the commercial logic. In terms of the state logic, the focus of airlines is the realization of transport from one point to another, whereas from the perspective of the commercial logic the activity in question is carried out with a commercial expectation. The state logic views transportation as a duty of the state and thus funds it with the public funds, whereas with the commercial logic, the funding source is an enterprise's own capital. Regarding the management mechanism, while the state logic has the state as the management mechanism, with the commercial logic, it is the market.

The findings are divided into two periods. The first period covers the first liberalization period, which presents 1983-2003 years in which commercial institutional logic is observable, but the state logic is dominant. The second period represents second liberalization period in which commercial logic starts to be more dominant but state logic is still observable. To this end, this section is divided into two; the first section explains the first liberalization

Table 3. Institutional logics and business models in the organizational field

Categories	**State Logic**	**Commercial Logic**
Source of Legitimacy	Public service provision by legal regulations	Sustainable service delivery Low-cost and/or high-profit service delivery
Sources of Authority	Legal regulations	Market rules
Airlines' mission defined by logic	Air transportation as a public service	Air transportation with commercial expectation
Basis of attention	Air transport from one point to another	Low cost and high profits in the entire air transport process
Economic System	Public funds	Business capital
Control mechanism	State	Market
Periods of Research	Dominant in 1983-2002 period	Dominant in 2003-2020 period
Business Models embedded in multiple logics	Traditional, Regional, Charter, Low-Cost	

Note: It was created based on the research data and the publications (Gerede, 2010; Göktepe, 2007; Laasch, 2018; Önder & Üsdiken, 2016; Özseven et al., 2014; Thornton & Ocasio, 2008; Thornton et al., 2012a; Yalçınkaya, 2018)

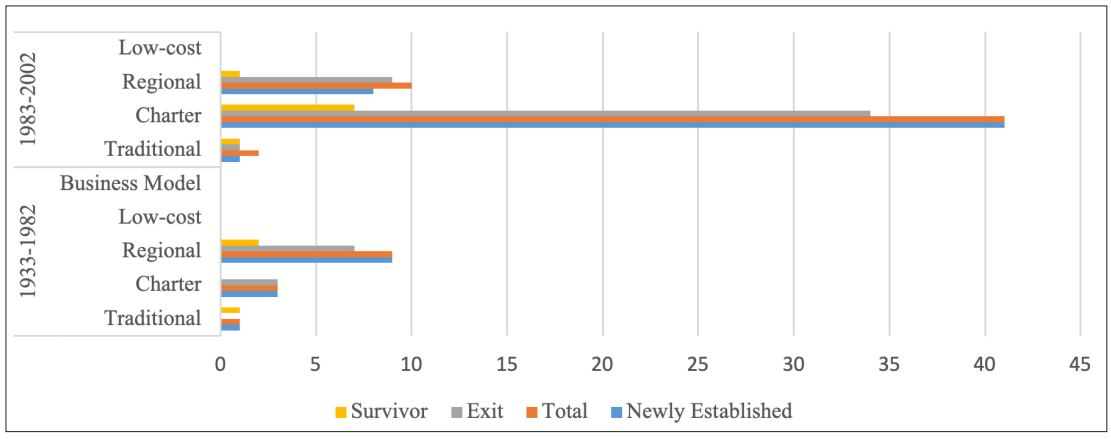

Figure 1. Airline business models in the field (1933-2002)
Note: It was created based on the research data

period between 1983-2003 and the second part covers the years after 2003.

The Boom of Charter Airline Business Models

Except the traditional and regional airline business model adopted by THY and its subsidiary, and a few attempts of the private airline (e.g., Hürkuş), as stated in the previous section, it is observed that a private airline of Turkish origin and a different business model of the airline did not emerge until the 1980s (Appendix). As mentioned above, it is possible to say that it was the 1980s when the first commercial perspective emerged. The first indication of the emergence of commercial logic and the significant change that led to the emergence of different business models in this period is the publication of the Turkish Civil Aviation Law in 1983. With this law, charter airlines increased quickly (Figure 1).

Although this law was the first indication of commercial logic, the decisions made after this law show the approaches of the state and airlines were embedded in both state and commercial logic. Thus, these different approaches affected the airlines' business models (Table 4).

As a result of this law, Turkish private airlines were able to fly in the field, and it became clear that air transportation was not just a public service in which THY maintained a monopoly position (Gerede, 2011; Korul & Küçükönal, 2003; Yalçınkaya, 2018) but also it was a commercial business. The findings reveal that although the monopoly position has been modified but not eliminated especially in certain routes, this "flag carrier" cognitive barrier has remained valid in the aviation industry. Considering the type of the airline business models in the field between 1983-2002, the findings show that almost all airlines have selected a charter airline business model due to the mimetic pressures. Due to the demand from the Turkish workers who had immigrated to Europe and the approaches of the state to protect the flag carrier, most airlines chose the charter business model (Kozak, 2015). Also, THY has adopted various business models such as the charter airline business model of Boğaziçi Air Transport (BHT) in 1986 (DPT, 1990) and the regional airline business model of Turkish Air Transport Inc. (THT) in 1988 (Peker, 1991). By 1989, SunExpress airlines, which still operates today, was established.

Regarding the Turkish context, THY established a joint venture with Lufthansa to gain a share in the transportation of Turkish people who had immigrated to Germany and the transportation of passengers who traveled to Turkey for touristic purposes. Looking at the business model of SunExpress, its business model is a charter (SunExpress, 2019) because it describes itself as a "*holiday airline.*" After many years, SunExpress started to offer scheduled flights in 2001 (THY, 2017). Also, THY established an airline in Moldova named "Turkish Airlines SRL" in 2000 but decided to liquidate it in 2001(Hürriyet, 2011; THY, 2001).

Among other significant developments in the organizational field, the initial public offering of THY as a wholly state-owned company at a rate of 1.83% for the first time in 1994, and the privatization of support services that are important for all airlines and create loyalty can also be listed. THY' catering business USAŞ was privatized in 1989, and the ground handling company HAVAŞ was privatized in 1995 (DPT, 1990; Havaş, 2019; Özbek, 2006). In 1990, the privatization of Petrol Ofisi (POAŞ) as Turkey's largest fuel supplier public enterprise was decided by Decision No. 90/7 (İncekara, 2011; POAŞ, 2019; TBMM, 2000). Another critical issue for airlines is that airports began to change in the 1990s. In 1986, military airports were opened to civil aviation

Table 4. Featured changes/improvements in the organizational field (1983-2002)

Phases		**1983-2002**																				
Actors		**State**																	**Organization/s**			
Logic		→	←	←	→	→	→	←	←	→	→	→	←	←	→	→	→	←	←	←	→	→
Changes/improvements in the organizational field		Civil Aviation Law, Liberalization, 1983	Restriction for flying of charters in certain routes, SHY-6A 1984	Restriction for ground handling companies, SHY-22, 28.12.1984	19.11.1986-Agreement on civil aviation operations at military bases	Privatization of catering organization, 1989	Privatization of fuel supplier, 1990	Regulation for the budget and fleet of private companies- SHY-6A, 1992	Practice: THY is part of slot allocation board, 1992	Changes on Airport Management: First BOT project, 1993	Privatization of THY (%1,83), 1994	Privatization of ground handling, 1995	Restriction in the determination of the domestic destinations, 1996	Restriction for flying of charters in certain routes, 12.01.1996	2438 Official Gazette, free determination of prices, 2001	Decision: Domestic scheduled flights operated by THY & private companies	Lack of support to the private sector	Bilateral agreements 'Flag carrier cognitive barrier created by ICAO members, 1944-2020	Respect to 'flag carrier'	Serving mainly to citizens	Mimetic pressures	Insufficiency
Business Models	Traditional	x¨	¨	¨	¨	¨	¨	¨	¨	¨	¨	¨	¨	x¨	¨	¨	¨	¨	¨	x	¨	x
	Charter	¨	x	x	¨	¨	¨	x	x	¨	-	¨	x	x	¨	¨	x	x	x	x	x	x
	Regional	¨	x	x	¨	¨	¨	x	x	¨	-	¨	x	x	¨	¨	x	x	x	x	x	x
	Low-cost	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
*Meaning of the signs		←	**State Logic**				→	**Commercial Logic**					¨	**Driver**				x	**Barrier**			

Note: It was created based on the research data

with the protocol signed between the General Staff and the Ministry of Transport (Korul & Küçükönal, 2003). Public-private partnerships began to be implemented at airports for the first time in the 1990s. Therefore, the Build Operate Transfer (BOT) model projects, indicating that the public service approach to the State's airport construction and operation services began to gravitate towards commercial purposes, were first introduced in the 1990s (e.g., Antalya Airport,1993). Rent Operate Transfer (ROT) projects for airports, airport terminals, or other areas of the airport also began for the first time in the 2000s (e.g., Atatürk Airport, 2005)(DHMI, 2018, 2019). However, in this period, when the free-market approach and commercial logic began to dominate, it is observed that state logic continued to exist in the organizational field. At that time, the establishment of more than ten airlines in a short time, together with the civil aviation law and the bankruptcy of some due to a lack of resources and lack of infrastructure (Akyüz, 1987; Kozak, 2015; Sungur, 1992), revealed the need for taking the organizational

field under control again by state intervention. According to the State Planning Organization report (DPT, 1990), among the private airlines still operating in 1990 were NESU Aviation and Trade Inc., Toros Airlines, and Tur Avrupa Airlines, which had a charter airline business model, and Sönmez Holding and Emekli Ticaret Aviation Inc., which are thought to have a regional airline business model. They carried passengers between specific points with low capacity during the said period. One exception is Istanbul Airlines, which operates scheduled flights with large aircraft. While it used to have a charter airline business model like other airlines, Istanbul Airlines later switched to scheduled flights like THY, which was reported in the newspapers (Cumhuriyet, 1997). While it was supposed to be essentially a free market, flag carrier THY's protective approach and lack of support from the State forced other airlines to have different business models. Thus, the insolvency of airline companies that adopt the charter airline business model also drew the attention of the Directorate General of Civil Aviation (DGCA), and some legislative amendments restricting airlines were introduced. These amendments to the regulation restricted organizations in terms of 'financial power' and 'number of aircraft. According to Article 16 of the SHY 6A, published in the Official Gazette on July 13, 1992, businesses had to have sufficient capital and aircraft. Interestingly, THY was excluded from the regulation. The regulation was placed in the press as ***"regulating private aviation"*** (Cumhuriyet, 1992), quoting the following statement of the Minister of Transport of the period: ***"They bring their passenger, but they do not take them back and victimize many people."*** The related literature also states that this decision did not translate into legislation such as laws, legislation, or regulations, but affected the private airline companies (Elçin et al., 2007; Gerede, 2011; Göktepe, 2007; Yalçınkaya, 2018). With the decision of DGCA dated 12.01.1996, flight points to be flown were determined as a precondition for airlines to arrange domestic flights, and special attention was paid not to harm THY's flight network (Ekdi et al., 2002; Göktepe, 2007; Hassu, 2004). Protecting THY indicates the existence of rules not determined by the market. There were some legislative decisions preceding the bankruptcy decisions of airlines that forced airlines to have a charter business model, perhaps leading to their insolvency. Another example is the SHY-6A Commercial Air Transport Enterprises directive issued in June 1984. Article 33 of this directive states, ***"non-scheduled domestic flights are not allowed between the points where scheduled flights are made."*** (SHY-6A, 1984). Another example of conflicting institutional logic concerns ground handling, an essential supporting service for airline operations. The owner of Çelebi Ground Handling Services, which provided services at the time, makes the following statement to the press regarding the period (Yenişafak, 2006):

"In February 1984, while the government was in favor of privatization, the Ministry of Transport issued a new regulation and declared the monopolization of the airport we served. A step was taken to nationalize it. I think this was done to protect today's HAVAŞ, then USAŞ. The regulation was changed in 1991."

When the mentioned legislations are examined, it can be seen that according to SHY-22 Article 3 of the ***Airport Ground Services Regulation*** published in 1984, the ground service organization is defined as a "state economic enterprise performing ground services at airports" (SHY-22, 1984a). In the same year, it was changed to "state economic enterprise performing ground services and private legal entities and included private enterprises" (SHY-22 Artic. 3(d)). However, as Çelebioğlu stated, while state-owned enterprises can offer all kinds of ground services, the area of responsibility of private enterprises was restricted to "air carriers operating scheduled flights" according to SHY-22 – 5b (SHY-22, 1984b).

The Emergence of the Low-Cost Airline Business Model

The lifting of the existing restrictions became more visible in the 2000s (Table 5), and domestic routes, which were not actually restricted by the legislation but were still not accessible for all airlines, were liberalized with the changing government. After the general election in 2002, a new Minister of Transport, Maritime Affairs, and Communications was appointed. The most critical development of the 2000s was the Minister of Transport's approach, which stated that "The airway should be the way of the society" and meant ***"Each Turkish citizen will fly at least one time".*** This approach has paved the way to opening domestic routes for private airlines and having more flights to make mobility more widespread among citizens (Figure 2).

From the institutional logics perspective, the essential finding of this research is that while this approach was indicative of a statist approach, it was revealed that it served a commercial purpose. In other words, a statist discourse has opened the way for businesses that act like commercial logic.

The changes in the approach have played an instrumental role in the emergence of different business

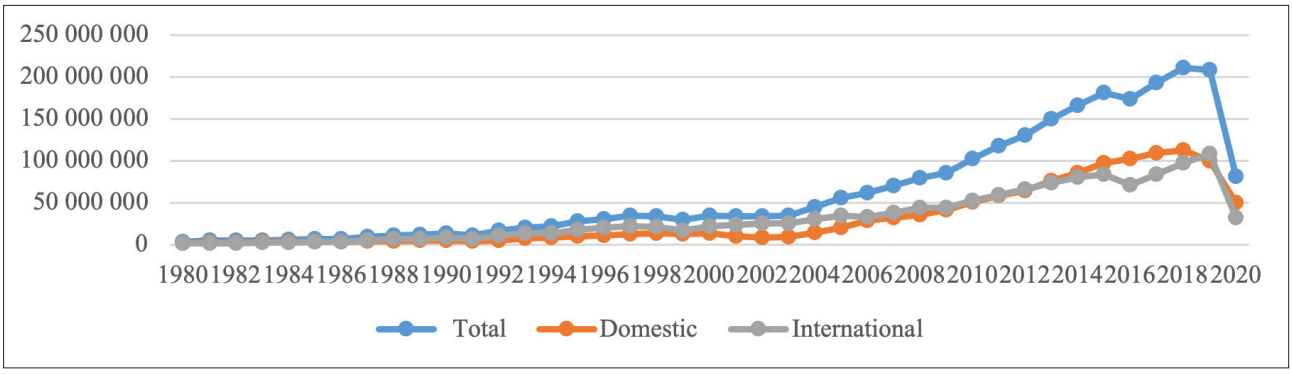

Figure 2. Total passenger traffic at airports
Note: It was created by an author based on the airport statistics (TUIK, 2020)

models and the changes in existing business models. For instance, Atlasjet (latest name Atlas Global went bankrupt in 2020), which had a charter airline business model in 2001, changed its business model in 2004 to the traditional airline business model, although it differed from THY's business model (AirportHaber, 2015; Atlasglobal, 2018). When we look at the airlines operating today, we can see that Onur Air, founded in 1992, has transformed its business model from a charter business model to a low-cost airline business model (Onurair, 2020). Another example is Pegasus Airlines, founded in 1990 but later acquired by ESAS Holding in 2005, which transformed a charter airline business model into a low-cost airline business model (Pegasus, 2019). When the business models owned by other airlines operating air passenger transportation are examined based on the definitions they provide on their official websites, it is observed that Freebird and Tailwind Airlines also have charter airline business models. Another airline, Corendon Airlines, which describes itself as a "holiday airline," has also described itself as "low cost" in different press releases (Corendon, 2020; Freebird, 2020; Tailwind, 2020). In general terms, the low-cost airline business model emerged for the first time after 2003, and airlines with a charter business model have begun to adopt the low-cost or traditional airline business model. Another improvement is that state ownership of THY was reduced to below 50% for the first time in the 2000s.

Findings reveal two critical developments were slots and competition in the same period. The slots under THY's control began to be controlled by an independent Slot Coordination Center (Yalçınkaya, 2018), which began its operations on 25.02.2006 (DGCA, 2006), on the other hand, private airlines started to apply to The Competition Authority Presidency for the unfair distribution of the domestic and international flights *(Claim on the abuse of a dominant position of THY,* 2011). Contrary to these commercialization steps, it is seen that THY continued to invest in different countries at the time. In 2009, THY founded Bosnia and Herzegovina Airlines (Air Bosna) with a 49 % share (THY, 2009) and transferred its shares in 2012 (THY, 2012). In 2018, Air Albania was established with a 49 % share (THY, 2018). It can be seen that these joint ventures outside Turkey are driven and accomplished by the influence of political relations. With the establishment of airlines with different business models in Turkey, THY was driven both by the state logic motivating it to ensure that more citizens fly and by the commercial logic operating on utilitarian purposes to compete with different business models. The fact that the state-owned THY needed to provide services with a public service approach in the organizational field and had to fly on specific routes without compromising the traditional business model characteristics, as it had to be sustainable as a commercial organization, was challenging for it THY. In the organizational field, where the statist point of view holds, new flight routes have been given incentives to enable domestic air travel for more people (DGCA, 2013). Another example of this is the economic airport project. The DGCA describes the project as follows (DGCA, 2007):

"The economic airport project has been initiated to allocate airports with low passenger traffic to 'low-cost passenger transportation.'"

One of the most critical decisions was moving away from single airline designation decisions on international scheduled flights and making multiple designations during this period. It was found that there was a significant improvement in the field, the airline companies started to compete to serve the customers and on the other hand, the airlines started to benchmark each other for strategies and low prices. All these improvements played a role as a driver for some of the airlines (e.g. THY, Pegasus Airlines) and, on the other hand, became a barrier for other airlines (e.g. Fly Air) (Milliyet, 2006a, 2006b, 2006c)

Table 5. Featured changes/improvements in the organizational field (2003-2020)

Phases		2003-2020													
Actors		State										Organization/s			
Logic		←	→	→	→	→	←	→	→	←	←	→	→	→	→
Changes/improvements in the organizational field		«Airway should be the way of society» saying; «Each Turkish citizen will fly at least one time» 2003	Domestic market deregulation, 2003 2nd Liberalisation	Privatization of THY (%50,88), 2006	Revision of the regulation: SHT-SLOT, Independent Slot Allocation Center, 2006	Multiple designations in the international scheduled flights, the 2000s	State Support: Economical Airport Project, 2007	Tax procedure, 2003	Changes in Airport Management: First Rent Operate Transfer projects, 2005	State aid for certain routes, DGCA, 2013	Bilateral agreements 'Flag carrier cognitive barrier created by ICAO members, 1944-2020	Objection to 'flag carrier'(e.g. Competition Authority, 2011)	Serving to customers	Mimetic pressures	Insufficiency
Business Models	Traditional	¨	¨	¨	x¨	x¨	¨	¨	¨	¨	¨	x	¨	¨	-
	Charter	¨	¨	-	¨	¨	¨	¨	¨	¨	x	¨	¨	x¨	x
	Regional	¨	¨	-	¨	¨	¨	¨	¨	¨	x	¨	¨	x¨	x
	Low-cost	¨	¨	-	¨	¨	¨	¨	¨	¨	x	¨	¨	¨	x
	Low-cost-Network	¨	¨	-	¨	¨	¨	¨	¨	¨	x	¨	¨	¨	-
*Meaning of the signs		←	State		→	Commercial			¨	Driver		x	Barrier		

Note: It was created by an author based on the research data

DISCUSSION

The data obtained in this study show that the airline business models have diversified over time in Turkey (Figure 3), but they could not have survived due to the different approaches of the state and airlines (organizations).

The findings presented in Table 4 & Table 5 show that the actors' actions and approaches (e.g. state, organization) became the drivers and barriers for the airlines. The findings demonstrate that the dominant institutional logic in the organizational field was state logic until 2003 and commercial logic became more visible after the government changes. Thornton and Ocasio (2008), who argue that institutional logic can also change and diversify over time in the organizational field, assert that this change can be transformational and developmental. The present study found that the institutional logic change has been transformational and that commercial institutional logic emerged later to accompany the existing state logic. According to the classification made by Thornton et al. (2012a), the form of transformational change is segregation, and it indicates the development of an institutional logic that is distinct from the existing institutional logic. The findings in the study support the assumption that the actions of organizations, as Thornton and Ocasio (2008) noted, were influenced by the prevailing institutional logic of the period and should be interpreted accordingly.

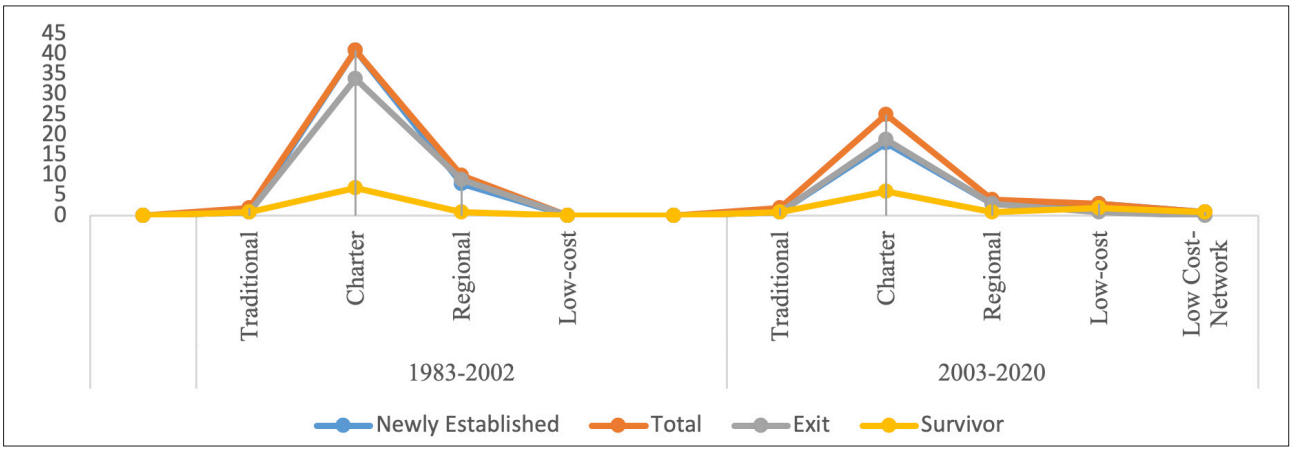

Figure 3. Business Models in Turkey (1983-2020)
Note: It was created by an author based on the research data

With the effect of the commercial logic of the 1980s, most airlines, except Istanbul Airlines, adopted a different business model than that of THY. The business model that marked the 1980s was the charter (non-scheduled) airline business model. Although there seems to be some isomorphism among private airlines here, there was also some differentiation in a business model distinct from THY's. The business model of Istanbul Airlines is the business model that is most similar to that of THY when the conditions of the period are taken into account, but the airline in question has not been able to continue its operations. During this period which witnessed the establishment of many airlines, most went bankrupt. An important finding in the study is that in the 1980s, when different business models emerged, THY adopted different business models under different brands and businesses. Based on the findings, private airlines that are expected to act by commercial logic have been restricted by continuous legal regulations under the dominant state logic and have not continued their activities. This fact has occurred not only by legal constraints but also by some intangible factors, these findings comply with the discussion of Thornton and Ocasio (2008). The most striking example of this is the restriction mentioned above brought by the flag carrier cognitive institution in the organizational field, which limited the options of airlines with different business models regarding their domestic and international routes. Shaped by the state logic, the 'flag carrier' cognitive institution emerged with the establishment of THY by the State in 1933 to serve the general public, an institution that has influenced other airlines (Yalçınkaya, 2018). The flag carrier institution dates back to the resolutions of the Chicago Convention signed in 1944 by member states, including Turkey (Nergiz, 2009). Influenced by the cognitive institution which everyone became inured to overtime, THY was able to fly to any point on domestic flights and became the only airline designated by bilateral aviation agreements (Elçin et al., 2007; Gerede, 2011; Göktepe, 2007; Yalçınkaya, 2018). However, it is known that single airline designation decisions are not specific to the Turkish context. It is often noted in the literature that various countries have determined the number of airlines that can operate international flights to control their airspace and that these airlines are their countries' "flag carrier"(Kassim & Menon, 2002). Therefore, it can be said that the same situation occurred in other countries in the 1940s but that its influence later decreased with the tendency of liberalization, privatization, and liberalization experienced in different periods. The widespread use of this practice suggests that such decisions were viewed as natural until liberalization emerged in these countries. The decision to designate a single airline in Turkey, considered 'normal' until the 2000s which is later than other countries, offered THY the opportunity to fly on all scheduled flights between countries. As of 2003, this has changed with the increasing effect of the commercial logic, clearing the way for private airlines' operation on domestic and international routes. This triggered the business models to transform from the charter to low-cost airline/low cost-network business model (e.g., Pegasus Airlines) or from the charter airline business model to the traditional airline business model (e.g., AtlasGlobal). Pegasus Airlines also adopted the low-cost network airline business model by changing it again. The other airlines have the charter airline business model as in the 1980s (e.g., Corendon).

To sum up, both institutional logics affect the diversification of business models. With some exceptions, influenced by the dominant state logic, there has been no business model similar to THY's business model, and the airlines have mostly continued their operations with different business models.

In the 1980s-2000s, especially after the Civil Aviation Act went into effect in 1983, charter airline business models suddenly appeared, increased rapidly, and then went bankrupt at the same rate. Indeed, this was not just because of insufficient capital and lack of experience, but due to the strict regulations (e.g., the restrictions introduced on 'financial power' and 'number of aircraft'; restrictions on flying specific routes; single designation for international scheduled flight) which aimed to control and limit the airlines that adopted the charter airline business model. Operating with the charter airline business models and affected by the state logic in the 1980s-2000s, airlines were unable to fly as scheduled domestic and international flights, their ground services were supplied only by the State, and had to prove that they had the sufficient fiscal power and aircraft to fly. This caused the airlines to be unable to sustain their operations for a long. Furthermore, they were affected by a new regulation that dictated the points flown on domestic routes. Driven by the commercial logic, there have also been changes in ground handling, catering, and fuel services, which are essential services offered as public services in the organizational field. During this period, THY was privatized for the first time as well. During the same period, THY tried different airline business models with its subsidiaries (e.g. BHT, THT) but they could not continue their operations for a long time. With the increasing number of charter airlines in the organizational field and many Turkish citizens emigrating to work in Germany, SunExpress airline, which had a charter airline business model, was established when both serving citizens and competition from foreign airlines were pressing issues. SunExpress airline is the first successful example of THY's multi-business model approach. The findings also show that while airline companies respected THY until 2003, they started to complain and became more competitive by competitive forces (mimetic pressures) generated by the other airlines.

CONCLUSION

To conclude, this paper examines the diversification of the airline business models in Turkey between 1980 and 2020 from institutional logic perspective. The study shows that airlines with different business models have emerged in addition to the traditional airline business model, which used to be the only one in the organizational field. However, no airline business model that resembles the traditional airline business model owned by flag carrier THY has yet to emerge. This is still the case today when THY has started adopting multiple business models besides its traditional one. In terms of institutional logic, until the 1980s, it was seen that the only institutional logic was the state logic and that the government maintained the entire airline transportation. Then it was realized that aviation was a commercial business that generated revenue. The emergence of commercial logic can also date back to the 1980s. However, state logic exists today and is considered a dominant institutional logic. An exciting conclusion of the study is that state logic plays a more significant role in the non-diversification of business models. While the 'flag carrier' constraint created in line with the state logic prevented the emergence of a business model similar to THY's, the "Airway should be the way of society" motto played a significant role in the 2000s to serve citizens, served a commercial purpose, even though it was part of a state discourse. With this change of perspective, domestic route liberalization and the inclusion of private airlines in scheduled transport on international routes have become possible. Thus, some airlines have transformed their business model, while others have introduced an airline business model that has yet to be exemplified in the organizational field. So, multiple institutional logics in the organizational field influence airlines' business models diversification.

This study contributes to the literature by analyzing the diversifications of the airline business models in four decades and by showing the actors' approaches embedded in multiple institutional logics that have been playing a role as barriers and or drivers behind this diversification. Conducting further scientific inquiries into this subject will help explain the role of institutional logic in the airline business models, especially in the post-pandemic period. Future research focusing on institutional logic may significantly contribute by adding the views of different stakeholders in the organizational field, decisions made by authorities, calls for recovery, state aids, incentives, and projects.

CONFLICT OF INTEREST

The declaration of interest is none.

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Appendix List of airlines in Turkey (1933-2020)

Business Model	Airlines	Established	Exit	Business Model	Airlines	Established	Exit
Traditional	Turkish Airlines (THY)	1933	2020	**Charter**	Albatros Airlines	1992	1996
Regional	Hürkuş Airlines	1954	1959	**Regional**	Airgroup	1993	1994
Charter	Anatolian Airlines (**)	1969	1969	**Charter**	United European Airways**	1993	1993
Regional	Cyprus Turkish Airlines (KTHY) (subsidiary of THY)	1974	2010	**Charter**	Holiday Airlines	1994	1996
Regional	Bursa Airlines	1977	1985	**Charter**	Sunways-Intersun Havacılık	1995	1997
Charter	Aegean Airlines**	1978	1978	**Charter**	GTI Airlines	1996	1999
Charter	Turkol Airlines	1979	1982	**Charter**	Dardanel Airlines	1996	1999
Regional	Karadeniz Airlines**	1980	1980	**Charter**	Rose Air Airlines	1997	1999
Regional	Toros Airlines**	1980	1980	**Charter**	Air Rose Airlines	1999	2000
Regional	Bergen Aviation**	1980	1980	**Charter**	Park Ekspress Airlines	1999	2000
Regional	Anadolu Air Transortation**	1980	1980	**Charter**	Inter Airlines	1999	2001
Regional	Doğu Airlines**	1980	1980	**Charter**	Anadolu Express Airlines	1999	2008
Regional	Güneydoğu Airlines**	1980	1980	**Charter**	Euro Sun Airlines	2000	2001
Charter	Sönmez Airlines	1984	1998	**Regional**	Turkish Airlines SRL (subsidiary of THY)***	2000	2001
Charter	NESU Airlines	1984	1989	**Charter**	Sky Airlines	2001	2013
Charter	Flying Carpet Airlines**	1985	1985	**Charter**	Freebird	2001	2020
Charter	Marmara Airlines	1985	1986	**Charter**	Atlasjet|AtlasGlobal (KKK)*	2001	2004
Charter	Orbit Havayolları**	1986	1986	**Charter**	Bosphorus European Airlines	2002	2004
Traditional	İstanbul Airlines	1986	2001	**Charter**	Fly Air Airlines	2003	2008
Charter	Boğaziçi Hava Taşımacılığı (subsidiary of THY)	1987	1989	**Charter**	Orbit Express Airlines	2003	2008
Charter	Talia Airlines	1987	1988	**Low Cost**	Onur Airlines*	2003	2020
Charter	Anadolu Havayolları	1987	1988	**Charter**	Corendon Airlines (CAI)	2004	2020
Regional	İnka Airlines	1987	1990	**Charter**	SAGA Airlines	2004	2013
Charter	Akdeniz Airlines**	1988	1988	**Charter**	World Focus Airlines	2004	2004
Charter	Toros Airlines	1988	1989	**Traditional**	Atlasjet|AtlasGlobal(KKK)*	2004	2018
Charter	Tur Avrupa Airlines	1988	1994	**Low Cost**	Pegasus Airlines* (PGT)	2005	2013
Regional	Bodrum Imsık Airlines	1988	1991	**Charter**	GoldenAirlines	2005	2008
Charter	Birgen Havacılık	1988	1997	**Charter**	Tailwind	2006	2020
Regional	Konya Airline**	1989	1989	**Charter**	Tarhan Tower Airlines	2006	2008
Charter	Noble Airlines	1989	1992	**Charter**	Best Airlines	2006	2010
Regional	Türk Hava Taşımacılığı (subsidiary of THY)	1989	1993	**Charter**	Turkuaz Airlines	2008	2010
Charter	Sultan Air	1989	1993	**Low Cost**	Anadolujet (brand of THY)	2008	2020
Charter	Sun Express Airlines (SXS) (subsidiary of THY)	1989	2020	**Regional**	Air Bosnia (subsidiary of THY)***	2009	2012
Charter	Pegasus Airlines (PGT)*	1989	2005	**Regional**	Borajet Airlines	2010	2018
Charter	Blue Line|Mavi Çizgi Airlines	1990	1992	**Charter**	İzmir Airlines**** (subsidiary of PGT)	2010	2018
Charter	Green Air Airlines	1989	1994	**Charter**	Sunexpress Deutschland GmBH (subsidiary of SXS)***	2011	2020
Charter	Action Air**	1991	1991	**Charter**	Corendon Dutch Airlines (subsidiary of CAI)***	2004	2020
Charter	Atlas Air**	1991	1991	**Charter**	Air Manas (subsidiary of PGT)***	2012	2019

Regional	Hitit Air**	1991	1991	**Low Cost-Network**	Pegasus Airlines* (PGT)	2013	2020
Regional	Siirt Airlins**	1991	1991	**Charter**	Kyrgyz Airlines (subsidiary of KKK)***	2013	2018
Charter	VIP AIR	1991	1992	**Charter**	Zagrosjet (subsidiary of KKK)***	2013	2015
Charter	Air Alfa Airlines	1991	2002	**Charter**	Jet One (subsidiary of KKK)***	2013	2018
Charter	Antalya Airways	1992	1992	**Charter**	AtlasJet Ukraine (subsidiary of KKK)***	2013	2019
Charter	Onur Airlines*	1992	2002	**Regional**	Air Albania (subsidiary of THY)***	2018	2020
Charter	Bosphorus Airways	1992	1993				

Note: It was created by an author based on the research data and the publications (Adiloğlu-Yalçınkaya & Yalçınkaya, 2019; Battal & Kiracı, 2015; DPT, 1990; Gerede & Orhan, 2015; Hürtürk, 2016)

*These airlines changed their business models,

**These airlines were registered but couldn't take the permission and/or never offered actual services.

***The bases of the subsidiaries of the airlines are not Turkey

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Status Consumption and Negotiation of Tastes: Anchoring on Ethnic Capital

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ABSTRACT

This study examines status consumption and socio-cultural tensions between wealthy Turkish indigenes and newly enriched Kurdish migrants in Şanlıurfa, an underdeveloped city in Turkey. The article focuses on ethnicity, which enables the construction and negotiation of consumer identities and (re)production of distinctions between competing groups under the conditions of marketization. In this study, which utilized the qualitative research method, in-depth interviews were conducted with 32 participants, and techniques such as observation, participant observation, and historical methodology were utilized.

Ethnic capital, a subcategory of social and cultural capital, refers to the dispositions, rituals, and skills of an ethnic group and its members and serves as a source of social power to reproduce group distinctions. The findings contribute to the literature by revealing that, in a context where modernity is not completely entrenched, ethnic capital can explain the scope of competitive status consumption and power struggles. Consumers can still remain attached to their ethnic capital, as they move between different competitive positions in the field of consumption. It has been found that ethnic groups see themselves as having superior qualities—and yet a need to improve—and try to reflect this not by emulating necessarily 'the' or 'an' other but by emulating lifestyle consumption. .

Keywords: Rural-to-Urban Migration, Cultural Capital, Ethnic Capital, Status Consumption, Taste.

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INTRODUCTION

A client walks into the florist and asks for a flower arrangement to decorate his son's wedding table. When the florist asks what he wants, he says, "Just don't make it look like an Aşayir style". The florist nods to indicate that he understands what the client likes and dislikes. He does not need to ask for more details about the type, shape or color of the flowers (Field note, 2018).

Aşayir, meaning a feudal tribe member, is a condescending name given to Kurdish rural-to-urban migrants by the Turkish indigenes in Şanlıurfa (simply Urfa), Turkey. In a context where the codes related to ethnic identities and their consumption tastes are known by everyone, the client easily negotiated his own consumer identity and drew social boundaries by referring to ethnic tastes.

In late capitalist economies, ethnicity has also become exchangeable. The exchange process of ethnicity involves not only the idea of it as a thing for sale but also as a construct that can be exchanged by all actors in the marketplace. While marketers capitalize on it as a tool for value proposition, consumers can also construct and negotiate their consumer identities based on ethnicity, and integrate with and differentiate from others in society. Visconti et al. (2014) noted that ethnicity, which is discursively constructed and implies lasting group privileges, has been studied in the field of consumer research with a focus on how and why consumers elaborate, negotiate, transform, and commodify their ethnicity in the marketplace.

Belonging to an ethnic community and accumulated cultural dispositions are analyzed as a part of social and cultural capital (Oswald, 1999; Askegaard et al., 2005; Ourahmoune and Ozcaglar-Toulouse, 2012; Luedicke, 2015; Veresiu and Giesler, 2018). We argue that the focus of ethnicity studies should shift to a concept of "ethnic capital". We draw attention to ethnic capital as a type of capital accumulated by consumers through the internalization of ethnic values and norms, participation in ethnic bonding activities, consumption of ethnic products, use of ethnic capital in ensuring social mobility and other social and cultural activities.

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Numerous researchers (Borjas, 1992; Cutler et al., 2005; Zhou and Lin, 2005; Vallejo, 2009; Shah et al., 2010; Mukherjee and Pattnaik, 2021; Iqbal and Modood, 2023; Haq et al., 2023) have examined the social and intergenerational mobility of immigrant communities within the context of education, employment, and the labor market. These studies have led to the development of the concept of ethnic capital."

Zhou and Lin (2005) argued that ethnic capital includes interactive processes of ethnic-specific financial, human, and social capitals, underlining that ethnic suburbs offer places and opportunities for ethnic bonding activities that facilitate upward social mobility in social networks. Vallejo (2009), in her study of immigrant middle-class ethnic communities that are neither class homogeneous nor lacking in social and human capital resources, found that ethnic communities provide a space where ethnic capital can be mobilized for upward mobility. Mukherjee and Pattnaik (2021) showed that ethnic affiliation translates into social capital, and ethnic capital is conducive to assimilation, rather than immigrants' socio-economic position and suburbanization. Ethnicity has been found to be a positive form of capital that allows consumers to challenge dominant and/or mainstream ideals, perceive a sense of being or belonging (Moran 2016), and ameliorate the effects of poor social class. Shah, Dwyer, and Modood (2010) argued that ethnic social relations and ethnic institutions can be conduits of cultural and social capital and therefore constitutive of class positioning. They found that some components of ethnic capital, such as family relationships, the transmission of values, and the enforcement of norms, are important in the educational context. Borjas (1992) revealed that the experiences and skills of ethnic groups rather than parents influence social mobility of the new generation. Thus, he suggested that ethnic capital can alter members' opportunity set and influence behavior, and labor market outcomes. Cutler et al. (2005) defined ethnic capital as having access to the set of individual attributes, cultural norms, and ethnic institutions that contribute to the well-being of an ethnic group. *Iqbal and Modood (2023) discovered that the ethnic capital of parents and the community can be a driving factor in their children's education, particularly in a socioeconomically disadvantaged context. Meanwhile, Haq et al. (2023) contributed to the field with their model that explains how ethnic minority culture shapes the development of human capital resources, as well as the relationship between these resources and business performance in communities that are often characterized as "left behind.""*

> "However, prior studies did not consider ethnic capital as a mechanism that reproduces distinctions between groups or as an element that is capitalized on within the framework of a positioning strategy. We argue that ethnic capital, which is a subcategory of Bourdieu's (1986) concepts of social and cultural capital and a form of inherited capital that individuals or groups use implicitly or consciously as a tool in their struggles within the consumption field, reproduces distinctions between groups. It can be utilized as a means of obtaining a contentious space in a society with high tensions stemming from migration. This study focuses on ethnic capital, which enables the construction and negotiation of consumer identities and the (re) production of distinctions between competing groups under marketization conditions, to examine the socio-cultural tensions and competitive status consumption between wealthy Turkish indigenes and newly wealthy Kurdish migrants in Urfa."

After briefly explaining the concepts of cultural capital and habitus, we discuss some influential studies that examine the socio-cultural patterning of consumption based on Bourdieusian theory. In the pages that follow, we scrutinize how cultural and ethnic capital are instrumentalized in tensions between wealthy but diverse ethnic women in the field of status consumption.

Socio-Cultural Patterning of Consumption: The Sociology of Pierre Bourdieu

Bourdieu (1986) argued that not only economic capital, but also social connections and tastes can serve as tools of positioning in society. Cultural capital refers to accumulated tastes, cultural practices, and knowledge, i.e. dispositions, rituals, and skills that serve as a resource of social power (Joppke, 1986). It is institutionalized in the form of educational qualifications, embodied in the form of long-lasting dispositions of the mind and body, and objectified in the form of cultural possessions (Bourdieu, 1986). In a consumer culture, products that are appropriated symbolically and materially serve as embodiments of shared cultural values, norms, and beliefs.

Habitus, a spontaneous and preconsciously acquired system of generative schemes, embodies implicit cultural knowledge and forms the basic frameworks of cultural tastes (Bourdieu, 1984; 2005). Driven from social structures, such as the structure of relations between the

groups or classes, it is a scheme of generative principles that shape a person's thoughts, dispositions, and actions. It also structures these structures as practices and representations are practically adapted to their outcomes (Bourdieu and Wacquant, 1992).

Consumption is a social setting in which consumers, who are cultivated in a socio-historically structured marketplace, position themselves, form relationships, interact and compete for capital, power, and status through products, brand images, and consumption practices (Arsel and Thompson, 2011). Some of the influential consumer research that draws on Bourdieu's sociology focused on habitus (Saatcioglu and Ozanne, 2013), cultural capital and consumer (dis)tastes (Wilk, 1997; Gayo-Cal et al., 2006; Sandikci and Ger, 2010; Arsel and Bean, 2013, Ustuner and Holt, 2010; Coskuner-Balli and Thompson, 2013), socio-cultural patterning of consumer acculturation (Ustuner and Holt, 2007; Luedicke, 2015; Hamlett et al., 2008), fields of consumption (Arsel and Thompson, 2011), symbolic capital, power and market dynamics (Ustuner and Thompson, 2012; Vikas et al., 2015), subcultures of consumption (Kates, 2002; Schouten and McAlexander, 1995), class structure and consumer identities (Ourahmoune and Ozcaglar-Toulouse, 2012).

The findings of these influential studies show that there are still gaps that need to be addressed in Bourdieu's sociology when used to explain social life organized around consumption practices and tastes. As Holt (1998) remarked, several important lacunae remain that need to be put under further scrutiny. When considered on the basis of ethnicity, Visconti et al. (2014) argued that there remains a lack of research on meso/macro forces influencing ethnicity (de)construction and personal/collective well-being. Similarly, Ger et al. (2018) urged consumption researchers to go beyond the lens of acculturation and focus on ethnic group conflicts.

Applying the Bourdieusian theories to consumer culture literature, Holt (1997;1998) focused on consumption practices and investigated the systematic differences in tastes and consumption practices driven by cultural capital. He showed that consumption serves as a powerful site for the (re)production of social stratification. Üstüner and Holt (2007) found that poor rural-urban immigrants internalize, exclude, or live outside the dominant Western consumer culture ideology and suffer from a fragmented identity project, but never follow cultural hybrid identity projects. Contrary to Bourdieu's (1986) argument that habitus and cultural capital are accumulated quite unconsciously through unintentional learning mechanisms, they (2010) showed that cultural capital accumulation in Turkey proceeds differently from his propositions. They highlighted high-cultural-capital consumers' deterritorialization of global consumption practices and deliberate adoption of Western cultural codes into their consumption fields in order to strengthen their social position.

Karademir-Hazir (2017) analyzed how cultural capital that is manifested in the "presented" self of (un)veiled Turkish women shapes consumption tastes. She found that the "dressed body", which expresses embodied cultural capital, can increase or limit opportunities and shape distinctions. Arsel and Bean (2013) extended the theoretical knowledge of taste by defining the regime of taste as a discursively constructed normative system that permeates daily practical knowledge and shapes the meanings attributed to products and actions. Skandalis et al. (2018) demonstrated that consumer tastes are also shaped by the spatial aesthetics of the marketplaces. Vikas et al. (2015) demonstrated how new capitalist socio-economic motives and status contests transform cultural dispositions of Indian caste members under conditions of marketization. Contrary to what is known, they found that young elite caste groups imitate the ostentatious consumption practices of the newly-rich lower caste groups based on aesthetic appeal.

Moreover, contrary to the general idea that dislikes are more revealing of taste than likes and they may result in cultural hostility between social groups, Warde (2011a) did not find expressed dislikes as the primary indicator of meaningful social boundaries. Wilk (1997) found that dislikes are not inherently anti- or pro-consumption, but instead form a complex and diverse social field in which they are often juxtaposed with their opposites. He also demonstrated that not all dislikes are associated with a despised class or group. Adding to Bourdieu's view that tastes are homologous between forms within the confines of one's habitus, Paddock (2018) pointed to omnivorous taste as an example of a new form of distinction

RESEARCH CONTEXT AND METHOD

This study focuses on the instrumentalization of ethnicity in social distinctions and social inclusion/exclusion through competitive status consumption. As a southeastern city in Turkey that is home to diverse ethnic communities (Turks, Kurds and Arabs, largely Muslims), Urfa provides a relatively isolated context in which ethnicity plays a vital role in the status consumption practices of close-knit, patriarchal, and hierarchical ethnic communities.

Urfa is a city known for the piety and conservatism of its inhabitants, who are mostly uneducated and relatively unreceptive to other cultures. Women often marry early, are overwhelmingly unemployed, and play the traditional roles of housewives and mothers. Feudal tribes still exist in the region, consisting of families or other groups that share a common ancestry, kinship and ethnicity. Oktem (2004) pointed to the active participation of Turks as the dominant ethnic group in the continuation of ethno-nationalist rituals and discourses, and the emergence of an aggressive Kurdish ethno-nationalism that mirrors the Turkish majority. While Turkish indigenes mostly resided in the old city center, Kurdish ethnic groups migrated to the outskirts of Urfa. Although the migrations were mainly due to economic difficulties before, their reasons have changed after the 1980s. Following the initiation of agricultural development programs, especially the Southeastern Anatolia Project, the rural people became prosperous and moved up socially. It is also claimed that income increases are due to the smuggling of weapons, oil, drugs, and alcohol (Gokce, 2009). Thanks to the transition to a free-market capitalist economy, the city attracted private capital and offered migrants a better income (Tore and Som, 2009). As villagers earned more, they were able to migrate to the city center and escape the unrest created by the armed conflicts between the Turkish Army and terrorist groups from the mid-80s onwards. Some other groups had to migrate from rural areas to central city districts, taking the compensation given to them after the lake created by the Atatürk Dam flooded their lands. The villagers, whom the government recruited as security forces against terrorists and earned good income, were also among those who migrated. Thus, Urfa has become an area where social encounters and polarizing tensions between indigenes and migrants become evident in daily life and consumption practices. The Turkish indigenes, who believed that the migrations polluted their places, defined themselves as the eternal owners of the city. They try to belittle the Kurdish migrants by calling them Aşayir. In response, Kurdish migrants gave them names such as isotçu, meaning leisure-loving and lazy person. By calling each other offensive names, they limit the shared understandings between the two groups and build social boundaries. The rising tensions and competition between rich indigenes and newly enriched migrants are also reflected in consumption practices.

This study examines how two rival ethnic groups living in Urfa construct and negotiate their own ethnicity through consumption practices in a marketplace where images of the Western global and authentic local are consumed as indicators of modernity and/or nobility. For the purpose of the study, the struggle of wealthy women to acquire and maintain status through status consumption practices is analyzed. To provide a cultural perspective on women's authentic experiences, the lead author conducted ethnographic fieldwork for two years. The dataset (participant observations, oral history, in-depth interviews, and archival materials) was interpreted by both authors. The fieldwork focused on rituals, language, interactions, physical environment, consumption practices, and tastes. However, due to the conservative culture of the participants, visual data could not be recorded except for home decoration photos. Phenomenological in-depth interviews were conducted with thirty-five participants in order to illuminate the participants' interpretations of their own experiences. The first part of the interviews included the participants' comments on migration and the resulting transformation in the urban area, and their identification of their own and others' identities. The second part included detailed interviews on women's interactions and competitive status consumption practices. Two interviews were conducted with mothers and their daughters to explore generational dimensions. Group interviews were also conducted with a local and a migrant who met during a home visit to explore tensions and compromises between them and learn more about their assessment of the other group. "The data collection process for this study was conducted through intermittent visits to the field from 2015-2017, and informed consent forms were signed by all participants prior to their interviews." After analyzing data from 20 interviews collected in a year in the field, 15 more interviews were conducted in the second year to collect more data on unsaturated themes. The interview database contained 735 transcribed pages of the 1912-minutes long audio recording. The visual dataset consisted of 716 photographs taken at home by the lead author and the participants themselves. The profiles of the participants are shown in Table 1.

In order to understand the research context socio-historically, archival data were collected through a 5-year systematic sampling from a local daily newspaper called "Hizmet Gazetesi" (initially named "Demokrat Türkiye"), which started publications in 1959. News and columns were collected on events that could point to the relations between two ethnic groups. In addition to cross-checking the different data, the findings were shared with the participants who agreed to be contacted for member checks to confirm the accuracy of the findings. Men and migrants who are neither indigene nor "Aşayir" are also interviewed to achieve credibility by triangulating the data source and incorporating different etic perspectives.

Table 1. Profiles of Participants

Nick Name	Sex (F/M)	Age	Education	Occupation	Marital Status	Indigene/Migrant	Data Gathering Technique
Kamile	F	36	Bachelor's Degree	Lawyer	Married	Mother: Indigene Father: 1st generation migrant.	Interview (Group)
Safiye	F	34	Bachelor's Degree	Teacher	Married	1st generation migrant	Interview (Group)
Ziynet	F	48	High School Graduate	Housewife	Married	2nd generation migrant	Interview
Gülendam	F	36	Master's Degree	Housewife	Married	Grown-up in Istanbul, married to 2nd generation migrant	Interview
Nilüfer	F	55	Bachelor's Degree	Retired Teacher	Married	2nd generation migrant but she defines herself as indigene	Interview
Özge	F	32	Bachelor's Degree	Interior Architect	Married	2nd generation migrant but she defines herself as indigene	Interview
Zümrüt	F	45	Primary School Graduate	Housewife	Married	Indigene	Interview
Esra	F	29	High School Graduate	Housewife	Married	Indigene	Interview (Group)
Zarife	F	48	Primary School Graduate	Housewife	Married	Indigene	Interview (Group)
Ferhunde	F	44	Primary School Graduate	Housewife	Married	Indigene	Interview (Group)
Zekiye	F	26	Master's Degree	Teacher	Married	Indigene	Interview (Group)
Hamdiye	F	27	Bachelor's Degree	Housewife	Married	Indigene	Interview
Muvaffak	F	35	Bachelor's Degree	Lawyer	Married	1st generation migrant	Interview
Meliha	F	50	High School Graduate	Housewife	Married	Indigene	Interview
Mahmut	M	65	Bachelor's Degree	Lawyer	Married	Indigene	Oral History
Zuhal	F	55	Secondary School Graduate	Housewife	Married	1st generation migrant	Interview
İbrahim	M	60	Associate's Degree	Freelancer	Married	Indigene	Oral History
Sevda	F	44	Primary School Graduate	Housewife	Married	Indigene	Interview
Aynur	F	46	High School Graduate	Housewife	Married	Indigene	Interview
Beril	F	40	Associate's Degree	Housewife	Married	2nd generation migrant	Interview
Çisem	F	37	Master's Degree	Academician	Married	Grown-up in Adana, married to 2nd generation migrant	Interview
Edibe	F	87	Uneducated	Housewife	Married	Indigene	Oral History
Fahriye	F	42	Primary School Graduate	Housewife	Married	Indigene	Interview
Fadile	F	48	High School Graduate	Housewife	Married	Indigene	Interview
Güler	F	69	Primary School Graduate	Housewife	Married	Migrated from another city, but not "aşayir"	Interview
Sema	F	42	High School Graduate	Housewife	Single	1st generation migrant	Interview
Sumeyye	F	28	Bachelor's Degree	Teacher	Married	Indigene	Interview
Zeynep	F	35	Master's Degree	Public Official	Single	Indigene	Interview
Reşit	M	48	Bachelor's Degree	Freelancer	Married	Indigene	Oral History
Mehmet	M	45	Bachelor's Degree	Sales Person	Married	Indigene	Interview
Bülent	M	36	Associate's Degree	Shop Owner	Married	1st generation migrant	Interview
Mine	F	33	Bachelor's Degree	Interior Architect	Married	Indigene	Interview
Güven	M	46	High School Graduate	Sales Person	Single	Migrant, but not "aşayir"	Interview
Gülşen	F	36	Associate's Degree	Sales Person	Single	Migrant, but not "aşayir"	Interview
Kamil	M	49	Bachelor's Degree	Shop Owner	Married	Indigene	Interview

The broader historical socio-cultural context, i.e. the context of context (Askegaard and Linnet, 2011), that structures competitive status consumption practices between wealthy women of different ethnicities, includes socio-cultural patterns of consumption and past and present ethnic struggles between the two groups. It is expected that examining consumption practices in the gendered context in Urfa, where there is religiously motivated gender-based segregation (i.e. *harem* and *selamlık*) in social life (Ozbay, 1999) will provide deep insights. Moreover, since most of the research focuses on middle-class subjects to illuminate the phenomena studied (Kandiyoti, 2002), this study attempts to fill the contextual gap by examining the consumption practices of wealthy consumers. In Urfa, women spend more of their social lives at home rather than socialize in public places. Even though women are just starting to appear in public, domestic gatherings are still common. Interviews and participation in meetings at the participants' homes allowed the researchers to uncover specific ideas about their consumption tastes and practices and the ethnic and cultural capital that is embodied in home decorations.

"To ensure the validity and reliability of the research, a diversification strategy was employed based on the requirement that "theories and explanations deduced from the research data should accurately cover what is actually happening" (Gibbs, 2002: 13). Firstly, the mutual compatibility of the data obtained through observation and in-depth interviews was examined. Additionally, data obtained from participants were cross-verified by themselves and other participants through member audit and sample diversity was also ensured. Moreover, to ensure the authenticity of the collected data, individuals from cultures outside the research field were asked about these practices. The diversification strategy was also applied to the data collection techniques; in addition to the in-depth interview technique, oral history studies were also included."

FINDINGS

Struggle with Capital within the Field of Consumption

The economic capital of indigenes was based on long-term land ownership, while migrants often acquired their capital from government compensation for the seizure of rural lands and from agricultural subsidies. Land ownership, proof of wealth for indigenes, satisfies their "desire to excel in pecuniary standing" (Veblen, [1899]2015) and is a sign of honor and prestige for them. While migrants use their entrepreneurial spirit as a means of struggle in the urban area, indigenes struggle by protecting their inherited wealth and avoiding entrepreneurial risks. Given their tribute for property ownership, the passive transfer of capital from ancestors, and their emphasis on dignity and honor as the basis for their dominance, they can be seen as a leisure class, as defined by Veblen ([1899]2015).

Vikas et al. (2015) illuminated the impact of marketization on the cast-based social order that dissolves old status hierarchies, and generates new power relations between competing agents. Although marketization in Turkey after the 1980s transformed the social sphere by reshaping/subverting the rules of competition (Boratav, 1999), the current findings do not indicate major transformations in status hierarchies among Urfa's old-money elites. This may be due to the conservative structure of the upper classes in Urfa and also to the prominence of ethnicity-based distinctions. However, Kurdish migrants emerged in the field through their newly-accumulated economic capital and their cultural capital built on education, entrepreneurship, and consumption and became the new agents of an indirect conflict. Aşayirs, who identify themselves with their ethnic communities, have become important actors in the market thanks to their entrepreneurship and innovativeness.

Gülendam, 34: Migrants have business skills. Indigenes are the owners of large lands and live only on agricultural products. They built their self-esteem on the wealth inherited from their farming ancestors. They spend half of the year in their houses in the luxurious districts of Istanbul. Most of the indigenous families I know have no jobs, they live on inherited wealth.

Ziynet, 47: I get annoyed with men who don't step forward. They live in a vicious circle. For the rich, life consists of Istanbul and Urfa. Immigrants built factories, engaged in politics, and succeeded in many other things. They got educated. In the past, [Turkish] men from Urfa did not attend school. There are very few educated men. Indigenes say: I am unreachable. Unfortunately, they are not. Their new generations are attending school just now.

Ferhunde, 44: Hotels and restaurants are run by Aşayirs. Locals wish to not descend to running such businesses. After all, you need to show undivided attention.

Meliha, 50: Indigenes don't take any [entrepreneurial] risks. They are engaged in

agriculture and buy real estate. They're lazy; they get up at noon, buy meat, and visit their "oda"- (a place used only for men's gatherings).

The trajectory of social transformation is primarily shaped by indirect struggles in the field of consumption. The finding that both groups transform each other's practices and dispositions supports the notion of consumer acculturation as an interactive and relational process involving mutual adaptation (Luedicke, 2015; Wang et al.,2020). Competition for higher positions in the social hierarchy is based on status consumption. Kurdish migrants took advantage of luxury brand consumption to improve their social standing. Home decoration is a consumption area where migrants pamper themselves relatively more. According to one migrant participant, indigenes are "stingy".

Ziynet, 47: The Aşayir man has many mouths to feed, and they give a quarter of their income to their tribes. His family takes the rest. For example, a rural family became rich with "haram" [ill-gotten] money. Others acquired their wealth through their vast lands. But there is always a trick. I call them new money. The rich of the dam… They were peasants and had ordinary lives. They came to the city after their lands were expropriated. They destroyed the city. They create a rift in the economy with the easy money they spend. I am not exaggerating: I would not pay 1.5-2 million TL to a purse. But the rich of the dam are showing off with their Louis Vuitton and Victoria's Secret wallets. You can build a city with the spoiled expenses of these women in Urfa. There is a gulf between old-money and an upstart. Their jewelry, their clothes, their house. You can establish an organized industrial zone with the value of only fifty of their houses.

Indigenes believe that migrants' wealth was acquired through unfair means and that their competing position in the market was not based on hard work. They attribute the gradual deterioration of their legitimate market power and status to their avoidance of illegal economic activities. Rather than spending their inherited legal wealth on ostentatious materialistic consumption, the indigenes differentiate themselves from the migrants by spending on subtly marked, inconspicuous but luxury items that can signal their distinctive cultural capital embedded in traditional social life. Eckhardt, Belk, and Jonathan (2015) point out that the dilution of the signaling ability of luxury goods and the inconspicuousness becomes the new conspicuousness. Similar to wealthy consumers (Warde, 2011b; Berger and Ward, 2010), who consider "conspicuous modesty" to be a collective ethical imperative, indigenes prefer subtle brand descriptors that fit their traditional tastes. In doing so, they differentiate themselves from those "not-in-the-know" and avoid unsophisticated consumption, which is bought with illegitimate money.

Ziynet, 47: They shop but they don't pay for it. Instead, they bully the helpless shop owner. They grow narcotic plants. They're state-supported mafia. Such wealth? There are many lies in many things said and a lot of haram in much of the money.

Zekiye, 26: Indigenes don't engage in trade. How can we let a brother bid on an auction? For God's sake, he'll be shot. We're afraid and don't approach them. My cousin tried to do business but had to quit. He would either die or be killed. This is how things work in Urfa.

The findings indicate that historical exclusion of Kurds tends to lead to the development of dependence on means and resources not utilized by the ones originally excluding the other; modernization and marketization provide the chance to improve one's standing by being entrepreneurial and innovative.

Urban Marketplace and Ethnic Capital

Noting that definitions of ethnicity are numerous and their connotations are plural, Visconti et al. (2014) argue that while ethnicity is about group privilege and relative permanence, ethnic identity is about subjectivity and individual agency. Besides being biological, ethnicity is also a characteristic belonging to a social group that shares a complex set of characteristics such as culture, race, religion, language, and customs (Jamal, 2003; Bouchet, 1995). Ethnic identity is related to the self-ascribed cultural origins and a person's self-definition influenced by others, that is, defined and categorized by oneself and others based on reference to ethnicity (Sekhon, 2015; Visconti et al., 2014).

Beji-Bécheur et al. (2012) studied the relationship between ethnicity and consumption and found that ethnic identity, a dynamic and relational concept, is constructed through social interaction with others. Ourahmoune and Ozcaglar-Toulouse (2012) identified two discourses that reflect the dialectics of ethnic group inclusion and exclusion and found that consumers prioritize collective identity goals over individual ones when faced with concerns of class and group survival.

Echoing these findings, In Urfa, both indigenes and migrants construct their relational identities based on ethnicity rather than simple urban-rural dialectics, using two discourses. One of the discourses is about self-identification with an ethnic group and its consumption and ethical references, and the other is about the exclusion of the rival group by being condescending toward its consumption tastes and practices.

In the Bourdieusian (1986) theoretical framework, cultural capital is conceptualized to explain differences in cultural practices, while social capital is concerned with social connections and interactions in a network. Our findings reveal that the status consumption practices of ethnic groups are driven not only by cultural capital, as demonstrated by Ustuner and Holt (2010), but also by ethnic identity. Even if they share the same spaces, send their children to the same schools, or shop at the same stores, they distance themselves from each other based on ethnic capital and compete to determine the boundaries of the consumption field.

We argue that in markets where modernity is not fully entrenched, ethnic capital can explain the scope of competitive status consumption and power struggles that cannot be explained by other types of capital. Although rural-urban migration in Urfa began in the 1960s and both ethnic groups share the same region and history, their relationship is rooted in tensions stemming from long-standing political ideologies and ethnic identity negotiations. Their differences cannot be explained simply by reference to ethnic differences, as shared ethnic dispositions and identities constitute a form of capital that can be used as a tool in constructing the social and market order, acquiring and maintaining power. We consider ethnic capital as a form of capital that refers to the habitual dispositions, rituals, skills of an ethnic group and group members and serves as a source of social power to reproduce group distinctions.

Luedicke (2015) examined indigenes who interpret certain immigrant consumption practices as a threat to the existing social and market order, functioning, and morality, and viewed it as additional manifestations of indigenous culture in decline. Echoing his findings, we found that Turkish old-money elites set boundaries to conserve the established order (Bourdieu and Wacquant, 1992; Swatz, 1997), while parvenu Kurdish migrants challenge their hierarchies, redefine legitimate tastes, and establish new competitive positions. The excerpt below illustrates that aesthetic legitimacy is assessed based on inherited ethnic dispositions and consumers draw on ethnic capital rather than cultural capital acquired in the educational system as indicators of tastes. In women's meetings held at houses, when both wealthy groups come together, they do not 'get close and cross boundaries', as an indigene put it, since 'money cannot veil ignorance and bad taste'.

> **Interviewer:** Can you distinguish an educated indigene couple from an uneducated one, both wealthy, just by looking at their interior design?
>
> **Esra, 29:** No. But I can tell the differences between the house of an Aşayir and indigene. My house isn't different from my better-educated friends. When you visit the house of an Aşayir (with a scornful tone), you can observe fancy wallpaper, lightning, and everything, but the way she decorates is so tactless.

Individual practices of agents are socio-culturally and historically contingent. Formation and utilization of dispositions, skills, and tastes rest on interpretive, intersubjective, dialogical and also, reflexive production, signification, and negotiation processes and are bound to more particularistic and less universalistic contexts (Bourdieu, 2005; Swartz, 1997; Aaskegaard and Linnet, 2011). Distinctions are formed through negotiation between available or accumulated capital compositions in a particular context. In the context of Urfa, the taste distinctions of Kurdish migrants and Turkish indigenes, both wealthy, are built less on class culture and more on ethnic culture. Suggesting that culturally-scripted behavior needs to be institutionalized to capture the ethnic nature of the practice, Gowricharn (2019) also revealed that taste differs between class cultures and also by ethnicity and ethnic taste implies consuming products that maintain the ethnic identity.

Our findings reveal that migrants compete with indigenes via conspicuous status consumption, and do not comply with the legitimate aesthete of the old-money indigenes. Then again, their taste distinctions and standards of superiority rest on interpretations of modernity and tradition, as well as the continuous and deep-rooted influences of ethnicity. Because of their ethnic origins, they do not expect to resemble the Turkish elites, so they pursue strategies of subversion of the established order and challenge their dominant position in the field of consumption (Bourdieu, 1984; Swatz, 1997). We argue that the current environment of global ethnic identity politics changes the game of 'differentiation and emulation' that Simmel (1957) explored in the diffusion of fashion. Differentiation and emulation are still existing phenomena, but this is a game between 'different'

groups, not between upper and lower classes/groups. Considering that each ethnic group sees itself as having superior qualities—and yet a need to improve—and tries to reflect this not by emulating necessarily 'the' or 'an' other but by emulating lifestyle consumption.

Desired Identity: Diverse Readings of the "Istanbulian"

The quotations below illustrate that the desired identity for both ethnic groups is that of the Istanbulians. Historically, Istanbul, the center of modernity and "the city with the golden soil", has attracted rural-to-urban migration. Even though Istanbul offers multiethnic and multicultural space (e.g. Erder, 1999; Secor, 2003; Kandiyoti, 2002) and for Keyman (2018), its identity is shaped by postmodernity, the Istanbulian has been envisaged to have a distinct urban identity by most rural Turkish citizens. As upstart Kurdish migrants invaded the consumption field, Turkish indigenes held on to their "noble and indigenous" identity. They tried to reconstruct their identities by reading the Istanbulian identity based on continuities with the noble and pious Ottoman history. In a struggle to protect their identity and lifestyle from the gradual discrediting in the context of globalization and marketization, they distance themselves from the Kurdish parvenus they hold responsible for the negative transformation. For Kurdish migrants, Istanbul connotes western modernity. They try to become a modern Istanbulian while avoiding the identity of underdeveloped and rural Urfa. One of our informants, Ozge, explained that she registered Istanbul as her son's birthplace to avoid the problems that the "subaltern" Urfa's identity might cause.

> **Çisem, 37:** People, in the western part of Turkey, say "They're from Urfa, they don't know anything." They think we live in caves. Media reflects Urfa with adobe houses, dirt roads, and naked children. We can eat, swim and dress up like them. We have nice buildings and cars. My husband used to live in Istanbul. He says that after getting to know him, they gave up their prejudices. When I go shopping in the Urfa center, and local people ask me where I'm from, I say Urfa. I realized that it satisfies me that they get surprised. I don't want to look like an Urfa citizen. Western culture is high culture.

> **Özge, 32:** (Talking about her years in Istanbul) You can't talk to people for a while. They keep asking about çiğ *köfte* [meatball made with raw meat], *sıra nights* [men's gatherings]. I never prepared çiğ köfte for them, although I craved it. Urfa is not about çiğ köfte. All they know about us are these.

Ethnic schemas and resources available to Kurdish women facilitate exercising agency to a greater extent compared to indigene women. Having grown up in a western city of Turkey, married to a wealthy Aşayir, and a migrant to Urfa, Gülendam argued that the Kurdish ethnic capital proved to be advantageous in status competition in the age of modernity. Ziynet, a Kurdish participant, proudly stated that they do not embrace gender segregation and women's oppression in their life, and are less religious compared to indigenes who pursue rather conservative and traditional lives.

> **Gülendam, 36:** According to my observations, indigenes are more nationalistic, conservative, and tradition-bound. Rural-to-urban migrants are more Kurd-nationalists. They like to spend more just to prove themselves. They are more open to modernity.

> **Ziynet, 47:** By calling Aşayirs as polite Kurds, indigenes say "You are peasants. Kurds are crude, and here you are holding a civilized wedding (she is referring to ceremonies without gender segregation)". But Kurds have always been a modern tribe. I tell them "Our life is modern already. That's our life; men and women live together". We don't do it for the sake of modernity or westernization. Rural weddings are held with all the family.

The mixed-married participants believe that since Kurds' ethnic lifestyle is more compatible with the Istanbul urban identity than indigenes' lifestyle that heavily rest on tradition and religion, Kurdish migrants "sprinted" in the race of becoming an Istanbulian and constructing a consumer identity that resonates with modernity.

> **Ziynet, 47:** Tribe members live together in public places. Their women are more cultured and farsighted. Unlike the indigenes, mother-in-law and brides don't quarrel. Unlike the indigene man, who forces his wife to obey his parents, tribal members don't even interfere in the bride's spending. Their culturally-modern lifestyle sets a bad example for indigenes.

> **Özge, 32:** Aşayirs were oppressed. To close the gap, they pave the way for women's emancipation. An indigene family doesn't buy a car for their newlywed bride, but Aşayirs do.

They can allow me to get the education I want and study abroad. I said that I want my son to have a good primary education, I don't want to live in Urfa", they say "OK, why not?" Just name a novelty, they're ready for it. They're at the forefront of being able to say "Me". They compare their weddings with the indigenes'. Women are like on the fashion podium. Indigene's weddings are gender-segregated. They are innovative.

Kamile, 36: My mother is an indigene and my father is an Aşayir. We lived differently than my mothers' sisters' families. I could apply for a university education. I was the first girl who was allowed to study abroad. We could go on a holiday. Unlike us, women in my mother's family are veiled. Thanks to my father, we're comparably freer.

In a struggle to protect their identity and lifestyle from the threat of gradual discredition in the context of globalization and marketization, wealthy indigenes distance themselves from the Kurdish parvenus they hold responsible for the negative transformation. Indigene women, on the other hand, developed subjectivities shaped within the boundaries of their habitus, ethnic traditions, and norms. Switching between emulation and appropriation of western consumption habits, they construct a consumer identity that also corresponds to their religious and traditional values. Sumeyye explained how they emulate western consumption practices. "Halal circle" corresponds to the fields in which the religiously-permissible practices can be carried out.

Sumeyye, 28: They lived behind closed doors. Hence, they try to adapt the different lives they see on TV to their own lives. They have to do it in halal circle. At women's gatherings and weddings, they offer open-buffets. They serve cola or juice in wine glasses. They hold wine glasses funny: pinky lifted or the goblet part is grasped. The ways they see on TV. They try to create a cocktail atmosphere by setting up small tables, chatting with each other, and throwing those cocktail aperitifs into their mouths. They're wannabes. The expression of the oppressive system in young girls erupts somewhere.

Being stuck between the western lifestyle they observe and the traditional and religious lifestyle they have, they playfully juxtapose opposites without necessarily adopting the new one. During the field research, the lead author attended a wedding. The wedding hall was organized like a ballroom in western fairy tales. Only women were invited. The common point of all of them, from those who dressed as if they were going to nightclubs to those who dressed as if they were going to a third-class pavilion, was the decollete they have in their clothes. The author was surprised to learn that a woman who had shaved one side of her hair and looked quite vamp in leather mini shorts and fishnet stockings was a covered woman with two children from Urfa. The women danced with each other while gazing at each other. At the end of the night, the groom and his friends would come to the hall to pick up the bride. When it was time for the men to come, one of the waiters turned the music down and took the microphone: "The men are coming!" said. With this warning, a great noise broke out in the hall. The women rushed to their seats, chairs pulled, tables pushed, everyone was trying to find their coats and headscarves and put them on. It was as if they were turning into Cinderella. When the men arrived, there was no trace of the old hall. They imitate western consumption patterns and swap cultures by using consumption objects to add novelty to their traditional lives. As for the consumers' culture swap, this case confirms the theory of Oswald (1999): they wear western, non-muslim, and global consumer identity, but switchback without complete commitment to it.

Competing through Consumption Tastes: Modern/ Traditional and East/West Collages

The cultural distinction between two wealthy ethnic groups is reproduced in the field of conspicuous consumption. The wealth of both ethnic groups shift the ideological/political conflicts to a focus of conflict based on consumption. Inter-group struggles take place under the symbolism of consumption objects. Although the logic of inclusion/exclusion is exercised through ethnic capital, the identity discourses are (re)produced and negotiated through status consumption in the marketplace.

Newly-rich Kurdish migrants' pursuit for higher social status has broken with their ethnic ideology and taken on a consumerist symbolism. As the newly-rich began to buy the well-known brands, the indigenes abandoned them to assert their distinction vis-a-vis the "Aşayirs" to an extent that the brands have been marked as the ones preferred by Aşayirs and the others by indigenes. They (re)produce distinction mechanisms and struggle for status using consumption objects and practices dynamically. Unlike the economic or cultural capital-based strategies elites use for differentiation from others (Veblen [1899]2015), the distinctions between indigenes

and migrants rest on the ethnic capital. The excerpts below show that while Kurdish ethnic groups identify themselves with western brands, indigenes desert these "denigrated" brands and switch to alternative brands to sustain their competitive status.

> **Zekiye, 26:** (Showing a video of Kurdish students dancing the halay with their Burberry shirts and Hummel shoes) Aşayirs prefer Hummel. They see it on TV shows. It's their brand now. They buy all Hummel products. Another tribe prefers Lacoste; it has become their uniform. Indigenes prefer Nike.

> **Kamile, 36:** We used to buy Vakko. Now, aşayirs buy it, we got estranged from it. They live in the best houses, in the best locations. They drive Mercedes with a puşi (scarf worn by Kurdish men) on their heads. They took over our things. Indigenes despise them and avoid all these.

> **Ferhunde, 44:** Indigenes prefer Aker, Ipekevi (scarf brands). They prefer simplicity. Syrian style. Aşayir's preference for Vakko alienated indigenes. To distinguish themselves, they changed their brand.

The symbols of distinction vary greatly between rival ethnic groups. The patterns of taste of the group are used founded upon, inter alia, ethnic capital. The findings reveal that they compete via their consumption tastes in a way that they oscillate between modern and traditional consumption signs and symbols. Consistent with their conservative and traditional lifestyle and social identity, they still prefer living in old houses that have traditional architecture and are located in the old neighborhoods in the city center. However, paradoxically, the interiors of their houses are designed according to the principles of aesthetic simplicity (Ustuner and Holt, 2007) that are associated with simple, elaborate, and plain styles, neutral and light colors, and a modern style (Figure 1). As Kurdish migrants appeared in the marketplace, they left their traditional taste that rested on the former Ottoman style to their rival ethnic group. We argue that they compete using practical logic; they abandon their consumption patterns as soon as Kurdish migrants contaminate them and develop a new competitive stance. Since their rivals cannot easily take over the old neighborhoods and houses, they still claim their own spaces. After the newly-rich migrants emulated traditional home decorating tastes with their "haram" money, the indigenes turned to an interior design discourse constructed through

Figure 1. Interiors of an indigene's house. Photography by researcher, 2018, with permission.

Figure 2. Interiors of a migrant's house. Photography by researcher, 2018, with permission.

decoration magazines, TV shows, and social media. They appropriate simple and western-style decoration objects' meanings to signify nobility and rootedness. Their tastes are constructed as a tool for ethnic group inclusion/exclusion.

Although wealthy Kurdish migrants have built a consumer identity that resonates with modernity and live in modern-architectural designed homes in new neighborhoods, their interior design choices combine traditional components with western and modern objects. Figure 2 depicts the interiors of a Kurdish (and Muslim) migrant: the living room is decorated both with Ottoman-design and western-design sofas together with paintings of Mona Lisa and Madonna della Seggiola hanging on the walls and a Santa Claus figurine standing next to the traditional buffet. Like other rooms, the nursery was designed with modern and traditional components that incorporate strong contrasts and vivid colors, bright hues, and a traditional organization style. Zekiye and Kamile's explanations above reveal that they juxtapose the traditional and the modern, east and west in their consumption practices and preferences. Their consumption tastes still have an ostentatious character that can be distinguished in the observer's eyes.

Bourdieu (1984: 56) argued that "tastes are the practical affirmation of an inevitable difference". Tastes are expressed in form of likes and preferences and, also, by dislikes. Through denial and refusal of "illegitimate" tastes, a social group constructs cultural boundaries against other groups (Warde, 2011). Observing that distaste shapes social distinctions more than taste, Wilk (1997) suggested that identities and social boundaries are built through non-consumption, non-association, and avoidance. The findings reveal that stereotyping based on ethnic identities can emerge as a discrimination mechanism based on the judgment of taste. The following quotations reveal how indigenes draw cultural boundaries by condescending and rejecting the migrants' ethnic tastes. Arguing that Aşayirs' exaggerated taste and over-indulgence in gold and glitters stemmed from their need for power and prestige, Sumeyye, an indigene married to a Kurdish migrant, said that simple interior decoration of her home embarrasses her husband's family. According to another informant, although they prefer trendy and well-known brands, a famous painting on the wall of an Aşayirs' home does not fit there.

> **Zekiye, 26:** X's house is so tasteless. She loves exaggeration and glamor. She's a Kurd, after all. That's why she has an "Aşayir" taste. So gaudy.

For example, she buys cocktail dresses with belts, furs, roses... Her furniture is huge, bright, and exaggerated. She had a rotating bed. The chandeliers and everything are so exaggerated. Glitters, everywhere. We burst into laughter when we first saw it. A typical Kurdish home. They like things that we dislike.

Fadile, 48: Indigenes and Aşayirs are distinguished by their finest clothing and their speech. Aşayirs' clothes are exaggerated. I mean, they look down on our humble style. Because, as I say, they are uncultivated. They didn't grow up learning these.

The wealthy Kurdish migrants dislike indigenes' preferences and build cultural boundaries, as well. Their accounts reveal that as a competing, yet newly-rich migrant group they do not consider Turkish indigenes as the dominant group that have the power to establish legitimate tastes. Bourdieu (1984) suggested that social distinction is built by the high class that has the power to establish legitimate culture and indicators of prestige. As Daloz (2007) observed that societal differences can challenge any general theory of elite distinction, our findings reveal that, in the competition between two ethnic groups, the old-money elites do not have a monopolizing position on establishing legitimate tastes to be used for inter-group comparisons. Furthermore, migrants' evaluations do not indicate any resentment or accommodation as two possible conditions of forming social boundaries that are indicated by Warde (2011a). Some informants explained that indigenes cannot develop an insight into their way of living, for instance, they fail to understand that Kurdish tribe leaders do not have "servants" that work for them. They have tribe members that spend their life with them and serve.

Ziynet, 47: A wealthy Aşayir thinks differently: my carpet should fit my sofa and curtains. They should be classy and elegant rather than ostentatious. But the indigenes don't care when the curtain and sofa don't match. Then that house seems very chaotic. They don't know anything about the interior design of the house. Everything from the arrangement of the sofa to the arrangement of the coffee table suffocates your soul. She is rich and has two sofa sets, but she has them all lined up like a furniture store. Plain, simple.. Such an eyesore. Aşayirs give more importance to order and tidiness. Women make a house a home. Aşayir women think more decorative than indigene women.

CONCLUDING DISCUSSION

Building on Bourdieu's theory of capital, this interpretive study focuses on ethnicity as the driving force of struggles in the field of consumption under marketization conditions and analyzes socio-cultural tensions between wealthy Turkish indigenes and upstart Kurdish rural-to urban migrants in Urfa, Turkey. Turkey's economic upturn in the 1980s fostered the proliferation of products and services and the emergence of Western-style consumerism. Scholars demonstrated that resting on complex socio-cultural dynamics, Turkey's journey through consumer capitalism and modernity culminated in many diverse cultural fragments and multiple identities (e.g. Kandiyoti, 2002; Sandikci and Ger, 2002). The findings from this study provide further insights that uneven west and east, as well as urban and rural economic development, lead to a heterogeneous consumption field that allows for diverse trajectories and interpretations of modernization. Supporting the argument of Firat (1992) that the nature of postmodernism will be different in cultures based on the extent of entrenchment of modernity, Sandikci and Ger (2002) remarked that the Turkish case indicates the complex relationship between modernity, postmodernity, and consumption. Urfa, located in the southeastern and less developed part of Turkey, provides a culturally-fragmented context where feudalistic structures, values, and lifestyles continue to exist alongside modernity. Elsewhere, we argued that we can still observe difference, interplay, and undecidability between modern and traditional in eastern Turkey (Özhan Dedeoğlu & Karaçizmeli Güzeler, 2016). The present findings reveal that, in a context of status competition, the struggle to construct and negotiate a distinct consumer identity for each group embraces paradoxical postmodern juxtapositions. Although both wealthy Turkish indigenes and newly-rich Kurdish migrants construct marketable identities by collaging modern/traditional and east/west, they have different readings of east/west and modern/traditional, nobility and commonness.

Oswald (1999) revealed how ethnic consumers culture-swap, i.e. move between cultural identities by using consumption objects. Our findings reveal that consumers swap, and also, juxtapose the modern and the traditional, the east and the west, and engage in status consumption based on their "collaged" social identities. They are bricoleurs (Bouchet, 1995) as they construct a "practical" consumer identity piece by piece. Echoing Sandikci, Ekici, and Tari's (2006) view of dialogical consumer acculturation process, our informants collage

different cultural resources and construct and negotiate consumer identities as they move between multiple and incompatible cultural positions. The present study contributes to the literature by revealing that, in a context where modernity is not completely entrenched, consumers can be still anchored in their ethnic capital as they oscillate between different competitive positions in the consumption field. Although newly-rich Kurdish rural-to-urban migrants' lifestyle and consumption practices indicate modern subjectivity and their desired identity is that of the western, urban, and modern Istanbulian, their consumption tastes rest on deep-rooted cultural continuities with the traditional, rural, and the eastern. Their habitus facilitates omnivorous openness in their consumption practices to modern, traditional, and to east and west. Wealthy Turkish indigenes, who occupied a dominant position in the social relations in the city and in politics, have begun to lose their power after mass rural-to-urban migrations. Since upstart Kurdish migrants challenge their hierarchies, redefine legitimate taste and establish new competitive positions, they try to preserve the established power position. Being inspired by the "noble and traditional" Istanbulian identity, their lifestyle and consumption practices rest on traditions. However, they imitate the Western consumption style by reshaping their consumption tastes in order to differentiate their own tastes from their competitors.

The study contributes new theoretical insights to Bourdieu's (1984) status consumption theory by demonstrating that ethnic capital explains the scope of the power struggles and the competitive consumption field that remained unexplained by other capital types. Even though ethnic identity has been widely studied in the consumption field (e.g. Penaloza, 1994; Oswald, 1999; Askegaard et al., 2005; Luedicke, 2015), ethnic capital is not considered a distinct type per se. Tambyah and Thompson (2012) remarked that ethnicity, a protean cultural resource, but not a stable characteristic, is used by consumers to construct their identities. They also conceptualized ethnic identity as a social brand and argued that symbolic ethnicity organized around product/brand signs and consumption practices resembles consumption-centered communities rather than traditional ethnic communities. Their insights can be further enriched by considering that, further than a social brand that fosters feelings of communal solidarity, it can be conceptualized as a capital that is firmly embedded within the field of consumption.

Ethnic capital refers to habituated dispositions, rituals, skills of an ethnic group and group members. It is accumulated by individuals who belong to an ethnic group through internalization of ethnic values and norms, participating in ethnic bonding activities, consumption of ethnic products, utilizing ethnic capital in achieving social mobility, and other social and cultural activities. It is embodied in tastes and practices and serves as a resource of power to produce social distinctions. The present findings revealed that, in the field of consumption, both rival groups use ethnic capital in (re)producing and negotiating consumption tastes, and thus, express aesthetic legitimacy, produce power relations, construct boundaries and gain status. To compete for status, they apply different and even incompatible cultural and ethnic schemes and resources to a wide variety of conditions and thus form a matrix of consumption patterns and tastes. As to the role of ethnic capital for competition strategies, the findings reveal that newly-rich Kurdish migrants compete with the Turkish indigenes through strategies of subversion (Bourdieu and Wacquant, 1992) based on ethnic dispositions such as an entrepreneurial spirit, relatively secular lifestyle, and tastes. The Turkish indigenes try to conserve their established order by relying on their rootedness, tradition, urban identity, and on religious values. They construct their relational identity by defining the other, i.e. "Aşayir". To confront the competitive challenge in the game of status consumption and differentiate themselves, they reshape their consumption tastes, so that they appropriate western, simple yet sophisticated consumption signs to signify nobility and rootedness. The present findings contradict the assumption that the tastes of the upper classes in Turkey have a homogeneous structure and they typically see to the West as a source of refinement and superiority are based on. (e.g. Vicdan & Fırat, 2013).

The present study extends the literature by showing that wealthy consumers in Urfa keep their distance from each other driven by their ethnic identification, not only by cultural capital. Existing studies on the socio-cultural patterning of consumption in Turkey (Ustuner and Holt 2007;2010; Ustuner and Thompson, 2012; Sandikci ve Ger 2002;2010; Sandikci, Ekici and Tari,2006; Karademir-Hazir, 2017) mostly focused on Western/urban consumption contexts. Our study contributes new insights by uncovering contextual differences in the socio-cultural patterning of consumption between urban and rural and east and west. For example, unlike the western contexts, in Urfa, old-money elites use indigenization as a strategy in their power struggles while newly-rich Kurdish migrants are more prone to western modernity. This finding reminds us of Ustuner and Holt's (2010)

study about status consumption in Ankara that found that high-cultural-capital consumers strive to construct a civilized lifestyle on an idealized West image, while low-cultural-capital consumers choose indigenization against it.

> ***"This study contributes to the literature by investigating how ethnic capital is utilized as a tool that reproduces distinctions between groups, particularly in struggles within the consumption field."***

Although this study has limitations in terms of keeping social class and gender constant, it focuses on the role of ethnic capital and status consumption in Urfa, a city where modernity is not yet fully entrenched. By examining how ethnic capital shapes consumption in an upper social-class context, we can better understand the social distinctions and consumption preferences of consumers, while setting aside their economic concerns related to status consumption. Future studies should explore ethnic capital in a variety of contexts, including economically developed, modern, and post-modern western societies, while taking into account differences in social class and gender.

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Rethinking the Division of Labor in IR: 'Critical' and 'Problem-Solving' Theories

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ABSTRACT

Decades after their incorporation into the discipline, the argument that 'critical approaches in International Relations Theory (IRT) are marginalized' is increasingly becoming questionable. Thus, it is a good time to reflect on critical approaches' evolution and achievements, as well as their 'marginalized position in IR' and relations with conventional approaches. To this aim, this paper focuses on realist and critical schools of thought while asking whether these two research traditions are conducting 'fair criticisms' of each other based on the other party's own promises and whether their criticisms help develop IRT's capacity in explaining and/or understanding world politics or undermine it. It also questions the assumed division of labor in IRT that holds conventional approaches responsible for solving the problems, while expecting 'non- conventional' theories to merely criticize the existing ways of theorizing and analyzing world politics. Accordingly, the paper first analyzes the realist school of thought in IR, going through the main arguments of different approaches to realism as put forth in seminal works. Second, it focuses on the development and main assumptions of critical theory mainly by focusing on Cox and Ashley's works and critical scholars' readings of them. Third, the paper discusses the main points of cleavages between the two approaches mainly based on the abovementioned division of labor, and their criticisms of each other while assessing the pearls and pitfalls of each. Following the discussion, it asks if there is a way out of these dichotomies and if it is possible to create a productive dialogue between 'problem-solving' and 'critical' theories.

Keywords: International Relations Theory, Great Debates in International Relations, Critical Theory, Problem-Solving Theory, Realism.

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INTRODUCTION

Critical theory has been introduced to the literature of International Relations theory (IRT) in the 1980s with the main claim that conventional theories of International Relations (IR) fall short of comprehending certain aspects of world politics. Although they differ in their main assumptions, what critical approaches share is their critique of conventional theories and especially their positivist approach to studying world politics. Decades after their incorporation into the discipline, critical approaches now have an almost central position within the discipline at least in several academic circles and multiple fields of research, rather than being an exception. Thus, the development and achievements of the critical approaches, as well as their 'marginalized position in IR' may require looking back on. Developed upon such starting point, this paper presents a critical look at realist and critical approaches to IR by relying on their own promises. It analyzes realist and critical schools of thought to give an account of their depiction of the world, their definition of problems of world politics, their strategy in handling/solving problems, and their potential and performance in keeping their own promises.

Questioning realist and critical approaches' claims and potentials so far, the paper asks whether they are conducting 'fair criticisms' of each other based on their own claims and whether their criticisms help develop IRT's capacity in explaining and/or understanding world politics or establish boundaries to claim their own territory within the field. It also questions the assumed division of labor in IRT that holds conventional approaches responsible for solving the problems, while expecting 'non-conventional' theories to merely criticize the existing ways of theorizing and analyzing world politics. Accordingly, the paper first analyzes the realist school of thought in IR, going through the main arguments of classical realism, structural realism, and neo-classical realism. Second, it focuses on the development and main assumptions of critical theory with a strong focus on Cox and Ashley's works and critical scholars' readings of them. Third, the paper discusses the main points of cleavages between the two approaches and their criticisms of each

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other. Following the discussion, the paper asks whether there is a way out of these dichotomies and a possibility to create a productive dialogue between 'problem-solving' and 'critical' schools of thought. The paper concludes that building a bridge between distinct research traditions that challenge the imagined boundaries between conventional and critical approaches to IR may be a promising solution to resolve the crisis of IR theory in terms of its relevance to world politics.

REALIST THEORY

Starting from the very establishment of the IR discipline, realism has been one of the most influential approaches to world politics that almost dominated the field. Since then, realist thought has evolved and given birth to different variants. Thus, the 'realist school of thought' refers not to a single unified theory, but a bunch of different approaches that share a realist view of the world. Realist thought has evolved especially within the so-called first and second debates in IRT, as well as the neo-neo debate. The dialogue between realism and idealism in the interwar period constituted the so-called first great debate within which scholars of IR discussed the causes and the prevention of war, as well as the role and place of institutions in international politics. Thus, although realist thought has its roots in Ancient Greek (see Thucydides's *History of the Peloponnesian War*) and continued to assert itself in the following centuries (See Machiavelli's *The Prince*, and Hobbes's *Leviathan*) realist theory of IR has been incorporated into the discipline in the interwar period.

In his landmark book *Politics Among Nations,* Morgenthau (1948, pp. 4-15) arrayed six main principles of the realist theory of international politics. First, politics are grounded in observable laws of human nature and an attempt to challenge these laws will lead to failure. Second, states act in terms of interest defined as power. Third, although power is a universally valid concept that remains at the center of realist theory, the meaning of this concept is not fixed and once for all. Fourth, political realism emphasizes the moral significance of political action. Fifth, it rejects the idea that a particular nation's moral aspirations can be moral laws that govern the universe. Sixth, political realism acknowledges the primacy and significance of political analysis. That period was marked by realist scholars' attempts to come up with a realist theory of IR and Morgenthau's principles signal that debates on a positivist research program and the centrality of empirical research were on the way.

The debate of the 1960s between behavioralists (defending scientific methodology) and traditionalists (defending historicist/interpretivist methodology) was about the question of 'scientific methodology' in IR which also paved the way for further alterations within realist theory. When it comes to the 1970-80s, the dominant way of making research in IR was positivism and realism has evolved to a more 'scientific' theory through its dialogue with the liberal school of thought within the so-called neo-neo debate. With positivism's dominant position in the IR discipline, scholars started to defend the implementation of scientific ways of doing social science like the unity of science, parsimony, falsification, and objectivity in theorizing and focused particularly on the empirical approach to IR. Waltz's structural realism was also influenced by this interest in scientific scholarship and he implemented his views on contemporary social sciences philosophy (Rengger and Thirkell-White, 2007, pp. 3-4).

Waltz's *Man, the State, and War* (1959) presents a debate on the causes of war, in which he comes up with the levels of analysis approach in IR. Waltz argues that the interplay between two or more of the provided images rather than one specific cause (man, the state, or its structures) may be to blame for the cause of conflict (1959, pp. 14-15). Thus, before formulating his theory two decades later in *Theory of International Politics* (1979), Waltz acknowledges the possible causes for war, without necessarily taking the others as constant and focusing on structure. However, according to Waltz (1979, p. 7), "explanatory power is gained by moving away from reality, not by staying close to it." While laws may only describe a correlation with a given probability, theories explain them. Structure acts as a selector and it puts constraints on agents, which are states. Structure selects by rewarding some behaviors and punishing others, and states become like units via socialization and competition (Waltz, 1979, 74). It is an organizational concept, in other words, an abstraction that is made to form a systemic theory (Waltz, 1979, p. 89).

This specific understanding of theorizing inspired Waltz's (1990) criticism that classical realism was a 'thought' but not a 'theory' due to its lack of systematic methodology and its historical method. He argues that reality is certainly complex, but theory helps us to simplify/abstract that reality (Waltz 1990, 26). Scholars such as Morgenthau and Aron misunderstood the very process of theorizing in IR[1] and this is why their

[1] 'Problem-solving' theories conduct a very similar yet more comprehensive critique to 'critical' approaches as well.

approach became unsuccessful in becoming a theory of IR.[1] As theories with traditional methodologies (see the arguments of the second great debate in IR theory) did not solve Aron's first problem, the issue of 'complexity,' they now cannot move to other steps of theorizing (Waltz, 1990, p. 27). What neorealism does is make international politics an autonomous domain thus making its theory possible (Waltz, 1990, p. 29). For him, the theory is an abstraction and it is never possible that it fits perfectly with the realities of the world.

At the empirical level, the main point of divergence between classical realism and neorealism is embedded in their analysis levels. While realism argues that power-seeking states are the reason for an anarchical international system, and a state-level analysis is the key to understanding international politics, neorealism argues that states are functionally similar, and anarchy is a 'permissive cause' for states' behavior. In other words, wars happen "because there is nothing to prevent them" (Waltz, 1959, p. 232). The levels of analysis discussion led to a new approach to occur in the early 1990s: neo-classical realism. For neo-classical realism, a one-level analysis falls short to understand state behavior in the international arena. The term 'neoclassical realism' was first mentioned by Gideon Rose, in his piece in World Politics journal (1998). As he summarized and many IR scholars agree upon, neoclassical realism combines domestic-level variables of classical realism with systemic analysis of neo-realist theory. Neoclassical realism relies on "the rigor and theoretical insights of the Neorealism of Waltz, Gilpin, and others without sacrificing the practical insights about foreign policy and the complexity of statecraft found in the classical realism of Morgenthau, Kissinger, Wolfers, and others" (Lobell et al., 2009, p. 4). Yet for Rose (1996), neo-classical realism aims to explain the foreign policy behavior of a specific state and to fill this 'gap' in the literature of IR theory, rather than to establish a general theory of IR.

Although there are objections to neoclassical realism being an IR theory, and criticisms that realism has become a degenerative research program by neoclassical realist attempts (See Legro and Moravscik, 1999) there are certain points that all these realist approaches including neoclassical realism share and aim to contribute to. According to Donnely (2008), the realist school of thought has been established upon four common propositions. First, anarchy is the operating principle of the international since it lacks any higher authority over agents. Second, states are the main actors that have agency in this anarchical system. Third, states are rational and unitary actors. They pursue self-interest and as many sources as possible (they care about relative gain) Fourth, the primary concern, goal, or state is survival. This is why states seek to increase their military power, which may lead to a security dilemma. Relying on these common assumptions, the realist school of thought also shared (either loose or strict) a positivist understanding of social sciences. This constitutes the main criticism of critical theory towards the conventional approaches to IR, which the following section presents in detail.

CRITICAL THEORY

Although conventional theories (realism being in the first place) almost dominated the discipline through decades, two different approaches to the study of world politics were established during the same period: the international society approach (English School) in the UK and the Marxism- inspired approaches of Frankfurt School in Germany (Rengger and Thirkell-White, 2007). Specifically in the 1980s, a critical approach to international relations emerged within the discipline that was inspired by Marxism's emancipatory approach (See Hobden and Wyn Jones, 2020). Two articles that came out in 1981, written respectively by Cox and Ashley, are widely referred to as the critical approach's founding texts. Two different paths led to the development of critical theory following these seminal works: Cox and his Marxian-inspired search for "the counter-hegemonic structures" that builds on the empirical method of historical sociology, and Ashley's structural realism critiques that are influenced by Habermas and his views of knowledge constitution (Hutchings, 2007, pp. 73-4).

As such, the so-called fourth debate of the discipline started in the mid-1980s between reflectivist and rationalist approaches (Sula 2021). In the development of these approaches, the focus was on the issue of science and the history of the IR discipline (Kurki and Wight, 2007). These divisions also work as a principle according to which the discipline is also currently organized. Cox's 1981 article was one of the initiators of this debate, which is also the main subject matter of this article. Cox, (1981, pp. 128-30) divided theories of IR into two in terms of their distinct purposes: critical theories and problem-solving theories. Problem-solving theories of IR refer to conventional theories, which serve as a guide to help solve the problems of world politics. These theories aim to keep existing structures, institutions, and relations effective by solving the problems that might have collapsed them otherwise (See Sula and Luleci 2016). Critical theories are reflective approaches, which are aware that there is no theory in itself, in Cox's (1981, p. 128) words, "divorced

from a standpoint in time and space." They aim to point out the possibility of alternative worlds and ways of theorizing. To put it differently, while the so-called problem-solving theory' is interested in the practice of the world, critical theory's focus (or subject matter) is on theorizing itself. This raises the question of whether critical theory is a meta/pre-theory which is not interested in the problems of the real world. This has also become the most important breaking point regarding the development of two approaches following the 1980s. The main premises of critical theory are as follows: first, human action is not free but it is possible within a historical framework; second, theory is relative; third, the principle goal is understanding changes; fourth, this framework consists of thought patterns, material conditions, human institutions; and finally, this framework (structure) should be viewed adopting a bottom- up approach (Cox, 1981, p. 135).

In line with the first assumption of critical approaches mentioned above, Cox relies on the analysis of history while developing this critical understanding (See Cox, 1983). For Cox, progress, and change are immanent in history, and can either be made or diagnosed. In the former (diagnostic mode) the potential for progress immanent in history is identified by critique, while in the latter (making mode) acting on the potential in history critique helps to have progress (Hutchings, 2007, p. 74). If we produce history through action, then it should be open for change. Cox aimed to demonstrate the possibility of change toward an emancipatory future by analyzing history. According to Cox (1981), critical theory refers to a theory of history because it is concerned not only with the past but also with historical change which is a continuing and dynamic process rather than being stable (See also Devetak, 2011). However, as the next section argues, it is misleading to assume that critical theory is only interested in the problems of history or theorizing while overlooking the current issues of world politics.

Adopting the idea that theory is relative, critical theory "always distinguishes itself from other forms of theorizing in terms of its orientation towards change and the possibility of futures that do not reproduce the patterns of hegemonic power of the present" (Hutchings, 2007, p. 72). Critical approaches encourage to rethink the established modes of theorizing in IR. Cox reconsiders the relationship between theory and practice by approaching the process of theorizing as a political act. For him, as well as for other scholars of critical theory, practice, and theory are in a mutual and interdependent relationship, and theory is made for either a practical or political interest (Hutchings, 2007, p. 74). Theorists are engaged in practice while they are theorizing. Ignoring this kind of theory and practice relationship, theories serve the preservation of the status quo that accordingly maintains and even strengthens existing inequalities. By recognizing that there is no clear distinction between practice and theory, critical theories have the potential to serve to transform the existing status quo (See Cox, 1983).

As Linklater (1996) suggests, we can talk of four main achievements of critical theory that are inspired by Marx (See also Lüleci and Sula, 2016). The first one is related to the Marxian approaches' emphasis on the relationship between object and subject. Following Cox, Marxian critical theory suggests that approaching subject and object as completely independent from each other reproduces certain interests, which in the end produces unsatisfactory social outcomes (this is also their main criticism against Neorealism). The second point is about critical theory's argument that change, in contrast to what traditional approaches argue, is possible. Established social structures are neither perpetual nor unchangeable. Since agents constitute the existing structure, they are also capable of transforming it. Third, critical theory is originally inspired by Marx, but it overcomes certain weaknesses by also following Habermas' ideas on discourse ethics, boundedness, as well as social learning. Fourth, and again following Habermas, critical theory judges social arrangements by their capacity and capability to grasp and incorporate dialogue with others. What mostly happens in social relations is that human beings become part of bounded communities that are established by excluding others, which led certain approaches to suggest that such bounded communities have to deal with each other with military means.

Habermas (2001) presents different social learning forms and what humans learn at the highest level of morality as ethical reflectiveness. This concept points to multiple agents' capacity to identify that these moral codes are not immutable and stable conventions to which they must submit, but they are alterable malleable social products. Once people reach a certain level of ethical reflectiveness, they start to question and then reject boundedness. Then, as Habermas suggests, agents engage in dialogue without necessarily excluding other communities and moral standpoints. This situation refers to the discourse ethics of Habermas according to which human beings need to reject systems and relations of exclusion and inclusion while they aim to engage in dialogue (See Habermas, 2001). One cannot exclude any persons or moral standpoints in advance.

Ashley, in his critiques of structural realism, also based his argument that IR needs an emancipatory change on Habermasian concepts of social learning and morality (Ashley, 1981, p. 208). Ashley (1981) argued that knowledge acquisition goes beyond three different types of interests, which are practical interest in understanding (social science theories), technical interest in controlling (natural science theories), and finally the interest in emancipatory potential, or in short, emancipation (critical theory). Ashley suggests that structural realism has a technical interest in controlling, which especially during the Cold War period dominated classical realism's practical interest in understanding. This situation makes realism, in its technical form, a self-fulling prophecy, mostly related to the nuclear deterrence politics of the Cold War (Hutchings, 2007, p. 75; see also (Lüleci and Sula, 2016). Based on this argument, Ashley called for a 'reflective understanding of realism' because of this argued need to rethink structural realism's (or the so-called technical realism) main assumptions. He emphasized the need for progress based on not technical or practical but emancipatory interests while also calling for the broadening of phenomena that are originally taken as relevant to world politics.

Critical theory's critique targets neo-versions of conventional theories more than classical realism and liberalism. Similar to Ashley's argument above, Cox (1981, pp. 131-2) argues that Carr's realist theory is historical in its origin but since the Second World War realist scholars such as Waltz created a new American realism that reinforces the historical mode of thinking by applying the idea of common rationality. This is what makes Neorealism a non-normative theory that omits moral goals. This change happened during realism's polemic with liberal institutionalism (Cox, 1981, p. 132). Shimko (1992) further argues that realism adapted itself to American politics by omitting some assumptions (i.e. pessimism about human nature) in the process of its dialogue with liberal approaches.

As analyzed so far, realist and critical schools of thought have their arguments and also criticisms toward each other. The fact that the history of IR theory has been established on the differences and debates between conventional and critical approaches makes these dichotomies even more persistent. The next section discusses these dichotomies in detail to find an answer to the question of whether there can be a constructive dialogue between two schools of thought.

Discussion: Problem-solving vs Critical Theory

After Ashley and Cox's 1981 article, critical theory has evolved in two different directions. Some scholars of critical theory directed their studies toward a neo-Marxian analysis of Cox's writings, while other scholars started to produce on post-structuralism and post-modernism. The latter emphasized the significance of social learning, and discourse, as well as how social and political structures are constantly (re)produced. This distinction is of course not as solid as mentioned here since some researchers utilize both ways in an integrated manner in their critiques of traditional approaches. However, although they differ in most of their specific assumptions, one common point that the critical approaches share is the rejection of what Cox names problem-solving theories and the methodology that they apply.

Problem-solving theories have two main characteristics: positivist methodology; and the tendency to legitimize the existing status quo (Devetak, 2022). Although critical theory presents objections to both, its most remarkable critique of problem-solving or conventional approaches is related to the former, their meta-theoretical stance, or in other words the way they theorize and the methodology/methods they prefer. According to Cox (1981, p. 128-9), problem-solving theories deal with particular and fragmented sources of troubled reality. Although their strength lies in their ability to fix certain parts of reality to analyze the other(s), this *ceteris paribus* assumption that they borrowed from economics makes them ahistorical and ignorant of certain parts of reality. Both critical theory and problem-solving theory take some aspect of human activity as their starting point for analysis, problem-solving theory makes further analytical subdivisions for the sake of analysis, while critical theory looks at a larger picture (Cox 1981, p. 129). According to Cox, by assuming that international politics is made up of clearly defined problems to be solved, conventional theories overlook "key dimensions of world politics that do not fit squarely into a problem-solving mindset" (Peoples and Vaughan-Williams 2021, p. 33). Unlike conventional theories' problem-solving approach that has 'a narrow focus', critical theory regards the political and social complex as a whole, not separating it into smaller portions and parts. It is interested not in solving the problems of the existing order but instead aims to question "the problem of the status quo" (Booth 2005, p. 10). Critical theory does not ignore the historical and spatial aspects of reality and asks how things (such as orders, structures, and institutions) came about, which makes it "a theory of history" (Cox 1981, p. 129).

Although critical theory's criticism of problem-solving approaches' methodology had a great potential to contribute to the development of the discipline, they have gone so far in keeping a distance from positivism that a significant portion of the literature lost track of empirical analysis. As Smith (1996) argues what shaped the discipline for forty years was not positivism but epistemological empiricism which advocates that knowledge rests upon observation. Critical theory stands for a non-positivist methodology and for critical theory one cannot claim to present a true empirical argument or statement. As an answer to the question posed in the previous section, one may argue that critical theory was established to be a meta/pre-theoretical stance rather than a theory of IR. Yet this claim does not represent critical theory's original claim since Cox (1981, p. 128) states "do not base theory on theory but rather on changing practice and empirical-historical study, which are proving ground for concepts and hypotheses." Thus, in its original form, critical theory is not ignorant of the problems and issues of the real world, and "its aims are as practical as those of problem-solving theory" (Cox 1981, p. 130). Thus, if critical theory has become irrelevant to the issues of world politics, current studies of critical theory are to blame looking at Cox's original promise.

Problem-solving theory's promise of being value-free is only partially accepted by critical theory. As Hobson (2007, p. 92) also points out, most of the critical approaches are 'self- reflexive' in the sense that they are aware of their biases as well as values in the process of theorizing. For Cox (1981), problem-solving theory may be methodologically value-free but its acceptance of the existing order as its framework makes it ideologically value-driven. Critical theory argues that what is problematic about problem-solving theory is not the latter's usefulness as action guides, but rather the conservative consequences of their ways of analyzing (Cox, 1981, p. 130). In other words, for Cox, critical theory does not have a problem with conventional theories' positivist methodology per se, but they argue that applying this certain type of methodology has ideological consequences. Ashley (1984, p. 228) also argues that it claims to side with the victors in both American revolutions, which refer to the scientific revolution that is against traditionalism, and the realist revolution that rejects idealism. He argues realism betrayed both of them and that it undermines the former by reducing political action to economic logic, and the latter by reducing methodological ways to a purely technical initiative.

While critical theory's main objection to problem-solving theory is the latter's approach to theorizing, Waltz answers these criticisms by stating that "to believe that listing the omissions of a theory constitutes a valid criticism is to misconstrue the theoretical enterprise" (Waltz, 1990, p. 31). Waltz argues that "critics of neorealist theory fail to understand that a theory is not a statement about everything that is important in international-political life, but rather a necessarily slender explanatory construct" (Waltz, 1990, p. 32). Cox's criticism of 'fragmented reality' which has its specific focus on state-society distinction in problem-solving theories as well as Ashley's criticism about neorealism methodology seems to be answered by one of the most prominent figures of conventional theories. However, with the rejection of any criticism of its understanding of theory, neorealism seems to be closing its door to open dialogue with other approaches and ideas.

According to critical approaches, what problem-solving theories do is to 'model the social scientist on the engineer' who tries to find an optimal solution to a practical problem of design (Bohman 2002). This is done to legitimize and maintain the existing social and political structures. Cox (1981, p. 128) suggests to "look at the problem of world order in the whole but beware of reifying a world system." Critical theory should not be taken as a radical idealist approach because it operates within philosophical realism, which means that it does not claim a world that is fully a creation of the mind. What critical theory aims to do is not to argue that there is not an existing operating order in the world. Rather, its aim is not to accept the existing order as it is and by questioning its (historical) roots it aims to allow for normative change (See Rupert, 2021). It follows what Marx once put forth, 'philosophers have only interpreted the world, but the point is to change it' (Marx 1977, in Devetak 2022). According to such a worldview, the study of world politics is unavoidably normative (Neufeld 1995, p. 108). For Cox (1981, p. 130) critical theory has a utopian side but it is limited by historical processes. However, conventional as well as post-structural critiques of critical theory claim that it is not feasible in terms of dealing with the problems of the world. Agreeing with Bilgin (2022, p. 70), I argue that "this is a misnomer" because critical theory does aim to solve the present problems of the world by not overlooking "the historical processes that have produced them." It aims to propose alternatives to the ways the existing world works by questioning the reification of things, ideas, and structures.

The example of how critical theory and realist theory differ in their perspectives of war can help make my point. The main question of realism, like other conventional approaches, is how to cope with the 'reality' of war as a natural feature of world politics. Because of the anarchical nature of world politics, states seek to maximize power in an environment of competition, which makes conflicts and wars inevitable (See Waltz 1979; Mearsheimer 2001; Lebow, 2021). Accordingly, realism aims to solve the problem of war by developing strategies to assist states in this struggle. Critical theory approaches war from a different perspective, regarding it as the construction of specific social, historical, and political processes. It aims to critically analyze the way the problem is set up in the first place, such as the taken-for-granted assumption that war is natural. Knowledge has an inherently political and social character (Cox 1981) which necessitates the researchers to denaturalize it for the ultimate aim of changing what we come to accept as reality. Critical theory's interest in denaturalizing and changing prevailing orders and structures is also dealing with, or trying to *solve a problem* that scholars identify. As such, it is misleading to argue that critical theory is not interested in solving the problems of the world, but it can be argued that it has a particular way to do it, which differs from conventional approaches. On a different note, some studies of critical theory tend to take the criticism of positivism for granted and accept that the positivist or empiricist way of acquiring knowledge would have political consequences. This process leads to the avoidance of conducting empirical research, which allows their critics to argue that they lost sight of the problems of world politics.

Critical theory's rejection of the positivist research program is what makes it a distinctive approach in the first place. However, this does not prevent conventional approaches from addressing this as a pitfall. In the 1980s, Keohane (1988) suggested that critical approaches' weakness lies in their lack of a clearly established reflective program. So, the problem, according to him, is not related to their critical arguments. Keohane (1988) also argued that critical approaches would remain invisible unlike empirical researchers and also they would remain on the margins of the discipline if they did not establish such research program and utilize it in their particular studies of world politics. As argued by Lüleci and Sula (2016), Keohane's criticisms of critical scholarship disregard their arguments on social science philosophy. Despite being an external critique that does not consider critical school of thought's own arguments, he still points to a pitfall in critical theory from the perspective of traditional approaches, which is the lack of an established research program.

Kurki and Wight (2013) argue that rationalist theories do not seriously consider critical theory's arguments because of their rejection of the critical camp's assumptions on ontology, methodology, and epistemology. This makes engaging in dialogue even more difficult. As Neufeld (1993, p. 60) argues, critical theory (or reflective scholarship) does not seek to build a research program that is designed to produce cumulative knowledge about the empirical issues of world politics or about the theory of it. Furthermore, one cannot talk about critical scholarship as a monolithic entity that shares each other's all assumptions. There are multiple critical approaches and their ability to make sense of the values and facts of the world through a reflexive understanding of knowledge is one of the many reasons why critical scholarship needs to be taken seriously (Hamati-Ataya 2013, p. 20). The critical scholarship does not aim to establish a research program. It aims to understand, rethink and reflect on normative, social, and political issues in world politics and to produce an alternative knowledge of it. As Tickner (2005, pp. 1-3) puts forward, the methodological framework that is utilized by critical scholarship (specifically feminism) does not present a claim over one particular standard of correct methodology. She adds that feminist scholarship in IR has continued to develop and grow since the 1990s and only a limited portion of this scholarship has adopted the path Keohane offered. Most of that scholarship adopts a critical perspective on world politics and also claims about knowledge of it.

As put forward by Keohane (1988), rationalist scholarship adopts the idea that most of us are Enlightenment children due to our belief in the significance of knowledge as a guide for improvement in human action. This rationalist commitment to the necessity of progress is defined mostly in terms of liberty, welfare, and security. Keohane challenges the critical scholarship from this standpoint that relies on a strictly defined understanding of progress through the accumulation of knowledge. This criticism toward critical theories follows a strictly defined understanding of what science is and what it does. However, critical theories share one common assumption, which is their rejection of positivist ways of doing social science (Smith (1996, p. 12). Thus, Keohane's 'gold standard' is actually what critical scholarship has been attacking in the first place, in other words, 'the *raison d'etre* of critical approaches to IR' (Lüleci and Sula, 2016).

Critical theory's another criticism of problem-solving theory addresses their reliance on Western concepts by which it is impossible to understand the problems of 'the rest.' According to Ashley (1987, p. 412) "modernist narrative -the multifaceted historical narrative rooted in the Enlightenment, is dominant in Western society, expressed in rationalist theory, and centering on the progressive unfolding of universalizing reason and social harmony via science, technology, law, and the state." This creates the perception that problem-solving theory aims to universalize Western understanding. Yet, reading Morgenthau's fourth and fifth principles about morality and ethics, is it still possible to accuse all the conventional approaches of making universality claims on behalf of the West? Furthermore, there are also criticisms of critical theory arguing that they are not successful in emancipating IR theory from Western domination.

Hobson while making an overview of critical theories explains important limitations over the application of those theories. He claims that Western explanations of world politics, be they conscious or subliminal, falls into Eurocentric racism. Especially by emphasizing the concept of subliminal Eurocentricism, Hobson points to an important inconsistency in the critical IR theory literature (Hobson, 2007, pp. 92-5). Critical theory, while criticizing the hegemonic relationship between the East and West, failed in accomplishing their aim of progress toward emancipation. For instance, in Marxist studies of hegemony, there is a certain historic bias that they mainly analyze the European hegemony over the East. Although they criticize this hegemonic relationship, there is an implicit role attributed to the Western powers to hegemonize the East. They have inevitably fallen into a fallacy by not giving agency to the exploited East. The very idea of emancipation stems from Enlightenment thought, which is a concept and an experience of the West. If current followers of critical theory fail to incorporate the experience of 'the rest' into their analyses, they become the very colonies of Western thinking by reproducing Western knowledge while trying to undermine it.

The lack of proper dialogue between conventional and critical camps of the discipline has led to a lot more than independent development of both approaches. Getting their positions too strictly, and focusing on criticizing each other rather than contributing to general knowledge production, positivist-non-positivist debate harmed their productivity and their capacity to solve the problems of the real world. IR theories have done a better job of understanding and (re)constructing the discipline, rather than making feasible analyses of world politics. In other words, while they were busy trying to define themselves based on an external critique of the other side, they have become ignorant of the changing nature of the world. Theories of IR seem to be in a feasibility crisis. Although a pluralist and multidisciplinary understanding is becoming widely popular within the discipline, theories of IR still have not developed the tools to understand/explain the changing nature of conflicts and wars, transnational alliances, the problem of increasing mobility (migration), poverty, and so on as the current issues in world politics. Be it 'critical' or 'problem-solving,' what does an approach to IR serve if it is not interested in solving the problems of the world? Is there a way out of these rigid dichotomies, or has the time of IR theory passed irrevocably?

Is There a Way Out? Call for a Constructive Dialogue

Traditional theories' critique of critical approaches focuses on the latter's lack of systematic methodology, rather than their main assumptions, or ideological consequences of their world views and analyses. Scholars of critical approaches on the other hand argue that their critique is not to the application of any type of methodology, but rather the political consequences of using certain theories in certain ways while potentially silencing others. Understood as such, it is possible to argue that the two approaches do not necessarily and inherently clash with each other in terms of the main assumptions they have regarding world politics. This begs a few questions: Is the division of labor between criticizing and problem-solving inescapable? Is it possible to reconcile conventional/traditional and critical approaches? Can IR scholars seek answers to both 'how questions and why questions' within a single study or approach?

Smith (1996) and Kurki and Wight (2007) argue in their respective pieces that both positivism and non/post-positivism have their pitfalls and ask whether the dichotomies in the discipline can/should be overcome. Smith mentions how ill-defined positivism is in IR theory and argues that the weaknesses and limitations of positivism are so obvious that positivism cannot be rescued, yet post-positivism also suffers from a lack of clarity (no single post-positivist approach). But positivism has become so powerful in the discipline that its assumptions become commonsensical and not easy to go beyond. Kurki and Wight (2007) offer that there might be a way beyond paradigms without completely rejecting none of them. Scientific realism can be considered as an attempt to go beyond the above-discussed debates of IR

theories while assuming a reality existing independent of us, either social or natural while relying on relativism in terms of epistemology, and advocating pluralism in methodology. Critical realism takes scientific realist assumptions even further. Both approaches refuse dichotomies and the so-called debates in understanding and applying theories of IR as lenses to approach world issues.

I argue that the treatment for the above-mentioned crisis of IR theory does not lie in the establishment of a third camp, but rather it lies in the idea of bridging once seemed to be conflicting approaches or 'an eclectic approach' as advocated by Peter Katzenstein and Rudra Sil. As Katzenstein and Sil (2010) argue and this study observes while analyzing realist and critical approaches "research traditions give themselves permission to bypass aspects of a complex reality" that does not fit in their theoretical or meta-theoretical commitments. Eclecticism argues that despite their conflicting meta-theoretical stances, the two approaches can be integrated. An eclectic understanding is synonymous neither with triangulation nor multi- method research (Katzenstein and Sil, 2010, p. 415). It rather refers to a middle-range pragmatic attempt to utilize distinct theoretical constructions by pooling them together.

Analytical eclecticism as offered by Katzenstein and Sil is a pragmatic approach that refers not to a third way but to a middle way and which stands for an interrelated and integrated understanding. Its pragmatic aim is to come up with more comprehensive responses to the complex social questions of contemporary world politics. Although their approach stands mostly within the boundaries of causal inference and/or the explaining tradition, the idea is that the so- called incommensurable or mutually exclusive research paradigms can and should come together to not fall into the trap of "excessive reliance on a single analytical framework and the simplifying assumptions that come with it" (Katzenstein and Sil, 2010, p 414). This also prevents the marginalization of scholarship and research that 'belongs to' certain research traditions.

So, is it possible to build a bridge between these approaches so that observation and data can become meaningful with interpretation? This call differs from foundationalist arguments in the sense that it inherently assumes that all our knowledge claims can turn out to be mistaken (Smith 1996). Knowledge claims cannot be universal, but they are always situated in political and social contexts (Rupert, 2003). This implies that all our knowledge claims are open to questioning and reconsideration. As Fierke (1998) argues, it implies the need to look again, in a fresh way, at the assumptions that we come to take for granted about the world. The added value or benefit of such an integrated approach lies in the ability to be aware of the weaknesses and strengths of the existing approaches and the freedom of utilizing both to make sense of a particular social phenomenon. This call does not make the incommensurability argument, as articulated by Feyerabend, automatically irrelevant though. The incommensurability thesis refers to the idea that terms and concepts that are applied in one research tradition or theoretical approach cannot be integrated or are not interchangeable because they are formulated based on different standards of research and assumptions about knowledge (Feyereband, 1962). According to this argument, an effort to bring distinct research traditions refers to an "artificial homogenization of incompatible perspectives along with a host of unrecognized conceptual problems that subvert the aims of the theory" (Katzenstein and Sil, 2010, p. 414).

This argument needs to be challenged based on at least three points. First, debates on theories and methods have become so central to the study of world politics in decades that they hamper curiosity about significant empirical questions that could otherwise be inquired. Still embracing the skepticism about empiricism, I argue that academic research that starts with an empirical question needs to be reconsidered and re-established. The focus on answering an empirical question also helps to make the imagined division of labor between 'critical' and 'problem-solving' theories. Second, the arguments of incommensurability and the division of labor between theories of IR have created distinct traditions in terms of research methods. While positivist approaches almost monopolized the use of statistics, questionaries, quantitative content analysis, process tracing, etc, most scholars that identify with post-positivist tradition perceive these methods as evil or useless, while adopting methods such as discourse analysis, thick description, and conceptual analysis (See Şatana, 2015, pp. 25-26). Third, even if they are not integrated into a single research, an open mind about 'the other research tradition' has the potential to foster innovative questions and new areas of research. Questioning the division of labor between IR theories as argued by Cox can be a starting point to adopt such an open mind. World politics is complex and multilayered, which more often than not requires looking beyond one's research tradition, even academic discipline. Refusing and marginalizing others' arguments, standards of research, and ways of inquiry conflicts with a very central commitment of social

sciences, which is to adopt a critical perspective while engaging in academic research.

The literature on border security and practice theory (or International Political Sociology-IPS) can be an example of how such artificial distinction can be overcome. IPS does not aim to create a distinct school of thought but acts as a hub to bring scholars that only share a commitment to present a critique of how IR and security have been studied (Guillaume and Bilgin, 2017). Questioning the existing boundaries around disciplines and theories, it aims to foster innovative epistemological, methodological, analytic, and theoretical perspectives on the study of world politics (IPS Section Charter). This call for openness has come with a rich field of study on borders and migration to which scholars of IPS contributed with their respective theoretical approaches and empirical questions. Analyzing border practices, most IPS scholars focus on empirical questions and seek proof from the empirical world in their answers while applying multiple methods such as network analysis, content analysis, discourse analysis, ethnography, and process tracing in their respective studies. Doing so, these studies are also able to reflect their critical stance towards knowledge claims and how world politics have been studied for decades inside the boundaries that have been drawn by gatekeeping activities and discourses.

Thus, an eclectic approach has a high potential to bring these two research traditions together and utilize them in a complementary manner with a pragmatic approach. In this way, complex issues of the social world, which have multiple dimensions including political discourse and socio-political practices can be approached more comprehensively without imagined boundaries around approaches and theories.

CONCLUSION

The integration of critical theory into the discipline in the 1980s generated a discussion on science and IR theory. This so-called fourth debate in IR is presented with different denotations such as 'positivism vs post-positivism,' 'explaining vs understanding,' and 'rationalism vs reflectivism' (Kurki and Wight, 2007). In his 1981 article, Cox defines these two camps as critical and problem-solving theories. This paper analyzed the content and relevancy of this denotation and the dichotomous nature of the discipline as narrated by multiple scholars of IR. While focusing on this general subject, it limits itself to realism and critical theory to make better sense of their commitments and critiques of each to the other. For this aim, the paper first analyzed both schools of thought by going through their own promises, then discussed the narrative that constantly re/constructs IR in terms of dichotomies. In the last part, the paper asked whether there was a way out of these dichotomies and to establish a constructive dialogue between 'critical' and 'problem-solving' theories.

The paper argued that both critical and problem-solving theories criticize each other from their own point of view. It argued that this type of criticism aims to justify one's own position while overlooking the other party's own promises. While critical theory criticizes conventional approaches for adopting a positivist epistemology and justifying and making possible the prevailing orders and structures by trying to fix its problems; conventional theories criticize critical theories for their lack of a 'proper' research program, and to ignore the 'real' problems of world politics. This paper challenged these arguments on two main bases. First, while critical theories never promised to develop a positivist research program, conventional theories aimed to adopt a 'scientific' approach in their analyses of world politics, especially following the 1960s. Thus, criticizing the other school of thought on one of its fundamental features constitutes a significant obstacle to establishing a constructive dialogue in itself. Second, both conventional and critical theories are interested in the problems of world politics, while the ways they choose to do that are different. Conventional approaches have a more direct approach in addressing the current issues in world politics with their commitment to positivism and empirical research. Critical approaches choose to question and denaturalize the orders and structures that make these problems possible in the first place. However, they both aim to address and solve the problems in the existing ways of how world politics work.

After identifying these arguments, this paper argued that the abovementioned points of divergence do not necessarily pose an obstacle to the establishment of a dialogue between once- divided research traditions of IR. By adopting a pragmatic approach that aims to address the issues of world politics, conventional and critical approaches may overcome their differences in terms of epistemological stances. Applying a pragmatic and eclectic approach to knowledge, conventional and critical schools of thought may start a dialogue with the aim of establishing a comprehensive approach to analyze world politics. Such dialogue will be possible by first questioning the imagined boundaries around problem-solving and critical theories.

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Effects of Geopolitical Risks on Countries' Trade Flows: A Nonlinear ARDL Analysis

Oğuzhan ÖZÇELİK[1]

ABSTRACT

In this study, the effects of geopolitical risks (GPR) on countries' trade flows are examined with the nonlinear ARDL method by using the data of 11 countries for 1993M01 – 2021M08 periods. According to the findings, positive GPR shocks reduced exports in Turkey, Russia, China, South Africa, Argentina, and Israel, whereas they reduced imports in Turkey, Russia, South Africa, and Israel. Negative GPR shocks increased exports in Russia, China, South Africa, Argentina, and Israel, whereas they increased imports in Mexico, China, and Argentina. It was determined that the effects of GPR on exports are symmetrical in Turkey, Russia, South Africa, Argentina, and Israel, whereas they are asymmetrical in Mexico, South Korea, India, Brazil, China, and Indonesia. Moreover, we find that the effects of geopolitical risks on imports are symmetrical in all countries. Increases in the REER decreased exports in Turkey, Mexico, India, China, Indonesia, South Africa, Argentina, and Israel, whereas they increased imports in Turkey, South Korea, Russia, Brazil, and Indonesia and decreased imports in Argentina and Israel. Increases in the world income increased exports of all countries, whereas increases in the countries' own national income increased imports in Turkey, Mexico, South Korea, Russia, India, Brazil, Argentina, and Israel.

Keywords: Geopolitical Risk Index, Trade Flows, Nonlinear Ardl, Symmetric And Asymmetric Effects.

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INTRODUCTION

Although free foreign trade is a very significant mechanism that increases the productivity and national income of countries, geopolitical risks, wars, and tensions between countries, as well as enforcements and boycotts may have considerable negative effects on external trade flows. Moreover, geopolitical risks might change the investment decisions of countries (Balcilar et al. 2018) and affect their transportation costs (Webster and Ivanov, 2014), as well as their production and economic growth (Gozgor and Ongan, 2017: 99).

In this study, when geopolitical risks are mentioned, they refer to risks or uncertainties that are related to interstate wars, acts of terrorism, and tensions that affect the normal and peaceful course of international relations (Wang, Wu, and Xu, 2019: 6). Major events such as the terrorist attacks that were organized with civil planes on September 11, 2001 on the World Trade Center in New York; the US military intervention in Afghanistan and Iraq; the Arab Spring that started on December 18, 2010 in Tunisia and spread to North Africa and the Middle Eastern countries and whose effects still continues in Syria; terrorist attacks that occurred in Paris in November 2015; aggressive policies of the US that were implemented against Mexico, China, and other countries after Donald Trump was elected as the US president in November 2016; tensions between North Korea and the US from 2017 till the first half of 2018; the COVID-19 pandemic; as well as Taliban's capture of Afghanistan in August 2021 have caused an increase in geopolitical instability. These types of negative developments have increased geopolitical risks and affected national and international economic activities negatively (Bouoiyour et al. 2019: 1-2).

Entrepreneurs, market participants, and central bank authorities regard geopolitical risks as key determinants of investment decisions and stock market dynamics. According to a survey conducted by Wells Fargo/Gallup with 1,005 investors in May 2017, 75% of the participants stated their concerns about the economic effects of militaristic and diplomatic conflicts in various parts of the world, and they ranked geopolitical risk before political and economic uncertainties (Business Wire, 2017).

The European Central Bank, in its April 2017 Economic Bulletin, and the International Monetary Fund, in the

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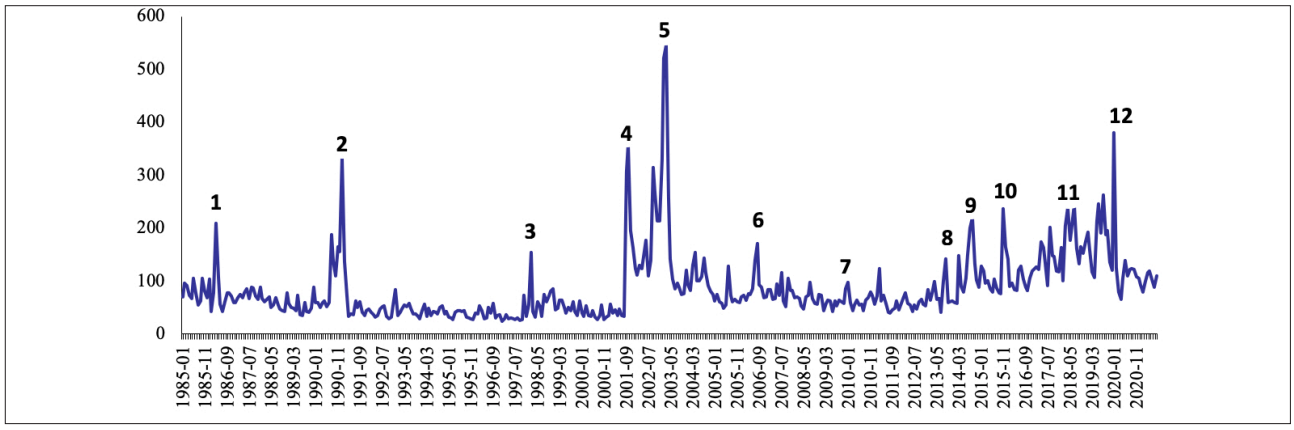

Figure 1. Geopolitical Risk Index (2000-2009=100)
Source: Caldara and Iacoviello (2017: 8) and Policy Uncertainty (2021).

October 2017 World Economic Outlook (WEO), highlighted geopolitical uncertainties as a salient risk to economic outlook (Caldara and Iacoviello, 2017: 2). When there is an increase in geopolitical risks, it becomes more difficult to transmit goods and make payments on time in international trade (Gupta et al. 2019: 516); tourism operations can be directed toward different destinations (Neacşu et al., 2018: 878), and stock markets and other financial institutions may make huge losses (Elsayed and Helmi, 2019: 2). An increase in risk leads to a substantial amount of foreign capital outflow from countries (Lu et al. 2020: 95), thereby increasing the exchange rate (Obstfeld, 2012) and leading to economic crisis (Jordá et al., 2011; Gourinchas and Obstfeld, 2012; Schularick and Taylor, 2012; Davis et al., 2016). The increase in geopolitical risks might be able to direct countries to allocate more resources to the defense industry (Buzdagli and Ozdemir, 2021: 188), leading to the use of resources in non-productive/improper areas, whereas they might be required for production and economic growth (Ghosh, 2022). Moreover, an increase in geopolitical risks might increase the demand of households and firms with speculative motives and are cautious, and this might cause scarce economic resources to move to non-productive areas and damage economic growth (Carroll, 1996: 1).

Despite its importance, it is very difficult to measure geopolitical risks and use them for quantitative analysis. To address this challenge, Caldara and Iacoviello (2017), who are members of the Board of Governors of the Federal Reserve, introduced the Geopolitical Risk Index (GPR) to the literature. In the current study, the effects of GPR on countries' trade flows are examined with the nonlinear ARDL method using the monthly data of 11 countries whose regular data could be accessed from January 1993 to August 2021. In the analysis, the GPR was decomposed as negatively and positively accumulated shocks, and we tried to determine the symmetrical and asymmetrical effects of the GPR on foreign trade. To the best of our knowledge, this is the first study to analyze the symmetrical and asymmetrical effects of the GPR index on foreign trade flows.

In the second section of this paper, the GPR index is introduced. In the third section, the data, model, and methodology are explained; econometric analyses are also conducted in this section. This paper ends with the conclusions in section fourth. Using the nonlinear ARDL method in this study has also provided significant contributions to deduce the symmetrical and asymmetrical effects of the GPR. Because both the GPR and the nonlinear method are used, this study is expected to provide significant contributions to the foreign trade literature and the countries' economies.

GEOPOLITICAL RISK INDEX

When Caldara and Iacoviello (2017) created the GPR index Caldara and Iacoviello (2017) when constructing the GPR index of 19 countries, they counted the words that were included in the news and articles of the 11 leading newspapers[1] published in the US, the United Kingdom, and Canada and labeled the geopolitical risks affecting the countries *"political tensions," "geopolitical risk or concern or tension or uncertainty," "coup," "guerrilla," "warfare," "nuclear or atomic war," "nuclear conflict," "fear or threat or risk or peril or menace," "war risk or fear," "military threat," "terrorist threat," "terrorism menace," "terrorist act,"* and *"beginning or outbreak or start or escalation of the war,"* and the index was then

[1] The Boston Globe, Chicago Tribune, The Daily Telegraph, Financial Times, The Globe and Mail, The Guardian, Los Angeles Times, The New York Times, The Times, The Wall Street Journal, and The Washington Post. The researchers explained the reason for selecting these newspapers as: The New York Times, Financial Times and The Wall Street Journal cover geopolitical events that are of global interest, and mostly the US is involved or will intervene in these events. Thus, the GPR index can be seen as a measure of geopolitical risks in the related areas for big companies, investors, and policymakers from the perspective of the North America and the Great Britain.

normalized to an average value of 100 from 2000 to 2009. The values that are higher than 100 signify deeper risks (Caldara and Iacoviello, 2017: 5-7). The authors also stated that the GPR also covers events that signify a reduction in geopolitical risks, such as the end of a war or peace negotiations (Caldara and Iacoviello, 2017: 8). While constructing the GPR index, climate change, significant democratic political events, such as Brexit, and global economic events, such as the 2008 global financial crisis, were excluded.

While constructing the GPR index, Caldara and Iacoviello (2017) used the algorithm of Baker et al. (2016) to calculate the Economic Policy Uncertainty (EPU) index. EPU or GPR are indices that can closely affect countries' economies and financial markets.

When the authors plotted the GPR index on a graph, they observed that they have successfully determined the significant geopolitical risk elements in the world. The updated GPR index[2] can be examined using Figure 1.

As depicted in Figure 1, the GPR represents (1) the US bombs Libya, (2) the First Gulf War in 1991, (3) the Iraq disarmament crisis, (4) the September 11, 2001 terrorist attacks, (5) the Second Gulf War that began in 2003, (6) the Iran nuclear tensions, (7) the Arab Spring that began in January 2010 (8) the Syrian War, (9) the ISIS Escalation, (10) the nuclear rocket tests of North Korea in 2016, (11) the toughening of the exchange rate and external trade wars between the US and China in 2018, and (12) the COVID-19 pandemic, which was widespread in January 2020. Therefore, it will be useful to use such an important index in economic analyses.

EMPIRICAL ANALYSIS

Data Set

In this study, the monthly data of 11 countries whose regular data could be accessed were used to analyze the effects of geopolitical risks (Geopolitical Risk: GPR) on the countries' trade flows from January 1993 to August 2021. The main independent variable of the study is the index that was prepared by Caldara and Iacoviello (2017), and these data were obtained from the Policy Uncertainty (2021). The data about merchandise exports (billion dollar, X), merchandise imports (billion dollars, M), and the industrial production index (IPI) (2015=100) were collected from the websites of the IMF (2021), OECD (2021), and FRED (2021). The data about the real effective exchange rate ($REER$) were obtained from the study of Bruegel (2021). Seasonal effects were eliminated from all the series. All variables are in logarithmic form.

Model and Methodology

In this study, the linear form of the models[3] that were tested to analyze the effects of geopolitical risks on the countries' trade flows are presented as follows:

$$LogX_t = \alpha_0 + \alpha_1 LogGPR_t + \alpha_2 LogREER_t + \alpha_3 LogY_t^w + \varepsilon_t \quad (1)$$

$$LogM_t = \beta_0 + \beta_1 LogGPR_t + \beta_2 LogREER_t + \beta_3 LogY_t^d + \epsilon_t \quad (2)$$

Here, $REER_t$ measures the appreciation/depreciations of the real value of a country's currency against the basket of its trading partners. An increase in REER affects the export of the home country negatively, whereas it affects the home country's import positively (Mankiw, 2010: 147-148). Y_t^w and Y_t^d denote the world income and the national income of the related country, respectively. Y_t^w is proxied with the average industry production index (IPI) of OECD countries[4], and Y_t^d is proxied with IPI of related country. An increase in positively affects the host country's export, whereas an increase in Y_t^d increases the host country's imports.

In this study, to be able to analyze the effects of geopolitical risks on the countries' trade flows, the nonlinear ARDL approach, developed by Shin, Yu, and Greenwood-Nimmo (2014) was used. Although this method is based on the studies of Pesaran and Pesaran (1997) and Pesaran et al. (2001), it based on decomposing the independent variable into its positively and negatively cumulative shocks. Therefore, it is also possible to determine the type of the effects (whether it is symmetrical/asymmetrical) of the related variable on the dependent variable (Shin et al., 2014: 282). In order to write Equations (1) and (2) in the nonlinear ARDL form, first, the GRP series should be decomposed into its positively and negatively cumulative shocks.

$$LogGPR_t^+ = \sum_{k=1}^{t} \Delta LogGPR_k^+ = \sum_{k=1}^{t} \max(\Delta LogGPR_k, 0) \quad (3)$$

$$LogGPR_t^+ = \sum_{k=1}^{t} \Delta LogGPR_k^+ = \sum_{k=1}^{t} \max(\Delta LogGPR_k, 0) \quad (4)$$

where GPR^+ and GPR^- are partial sums of increases (+) and decreases (-) of the GPR indices. When Equations (1) and (2) are written in a nonlinear ARDL form, Equations (5) and (6) are obtained:

[2] While generating this global index, all geopolitical risk factors worldwide were considered.

[3] This model was created based on the study of Bahmani-Oskooee and Arize (2019: 915), and we added the GPR index to the models.

[4] Consisting of 36 countries, the OECD constituted 61.46% of the world national income as of the end of 2020 (World Bank, 2021); thus, the production and income of the OECD countries have high representative power of the world income.

$$\Delta LogX_t = \alpha_0 + \alpha_1 LogX_{t-1} + \alpha_2 LogGPR^+_{t-1} + \alpha_3 LogGPR^-_{t-1} + \alpha_4 LogREER_{t-1} + \alpha_5 LogY^w_{t-1} + \sum_{k=1}^{m_1-1} \alpha_{6k}\, \Delta LogX_{t-k} + \sum_{k=0}^{m_2-1} \alpha_{7k}\, \Delta LogGPR^+_{t-k} + \sum_{k=0}^{m_3-1} \alpha_{8k}\, \Delta LogGPR^-_{t-k} + \sum_{k=0}^{m_4-1} \alpha_{9k}\, \Delta REER_{t-k} + \sum_{k=0}^{m_5-1} \alpha_{10k}\, \Delta LogY^w_{t-k} + \varepsilon_t \quad (5)$$

$$\Delta LogM_t = \beta_0 + \beta_1 LogM_{t-1} + \beta_2 LogGPR^+_{t-1} + \beta_3 LogGPR^-_{t-1} + \beta_4 LogREER_{t-1} + \beta_5 LogY^d_{t-1} + \sum_{k=1}^{n_{1-1}} \beta_{6k}\, \Delta LogM_{t-k} + \sum_{k=0}^{n_2-1} \beta_{7k}\, \Delta LogGPR^+_{t-k} + \sum_{k=0}^{n_3-1} \beta_{8k}\, \Delta LogGPR^-_{t-k} + \sum_{k=0}^{n_4-1} \beta_{9k}\, \Delta REER_{t-k} + \sum_{k=0}^{n_5-1} \beta_{10k}\, \Delta LogY^d_{t-k} + \epsilon_t \quad (6)$$

Here m_i and n_i represent the optimal lag lengths. In these equations, the long-term impacts of changes in GPR^+ and GPR^- indices on X and M are determined by the signs and significances of normalized $-\alpha_2/\alpha_1, -\alpha_3/\alpha_1, -\beta_2/\beta_1$ and $-\beta_3/\beta_1$ coefficients, respectively. Furthermore, the long-run impacts of the $REER$, Y^w, and Y^d are determined by the signs and significances of normalized $-\alpha_4/\alpha_1$, $-\alpha_5/\alpha_1$, $-\beta_4/\beta_1$, $-\beta_5/\beta_1$ and respectively (Shin et al. 2014: 286).

Table 1. Results of the ADF Unit Root Test

		LogX	LogM	LogGPR$^+$	LogGPR$^-$	LogREER	LogY^d	LogY^w
Turkey	***Level***	0.63	0.70	0.99	0.99	0.36	0.95	0.20
	First Difference	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***
Mexico	***Level***	0.14	0.45	0.99	0.99	0.07*	0.47	0.20
	First Difference	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***
S. Korea	***Level***	0.36	0.54	0.56	0.73	0.30	0.20	0.20
	First Difference	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***
Russia	***Level***	0.66	0.82	0.99	0.99	0.00***	0.93	0.20
	First Difference	0.00***	0.00***	0.00***	0.00***	-	0.00***	0.00***
India	***Level***	0.76	0.59	0.42	0.70	0.01**	0.19	0.20
	First Difference	0.00***	0.00***	0.00***	0.00***	-	0.00***	0.00***
Brazil	***Level***	0.37	0.80	0.98	0.94	0.00***	0.14	0.20
	First Difference	0.01**	0.00***	0.00***	0.00***	-	0.00***	0.00***
China	***Level***	0.86	0.71	0.85	0.93	0.01**	0.00***	0.20
	First Difference	0.00***	0.00***	0.00***	0.00***	-	-	0.00***
Indonesia	***Level***	0.73	0.80	0.97	0.98	0.10	0.86	0.20
	First Difference	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***
S. Africa	***Level***	0.75	0.49	0.99	0.99	0.09*	0.10	0.20
	First Difference	0.00***	0.00***	0.00***	0.00***	-	0.00***	0.00***
Argentina	Level	0.66	0.40	0.99	0.99	0.76	0.59	0.20
	First Difference	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***
Israel	***Level***	0.25	0.53	0.99	0.99	0.61	0.62	0.20
	First Difference	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***

Note: Values on the Table 1 are the probability values of the ADF test. ***, **, and * indicate that the series are stationary at the 1%, 5%, and 10% significance levels, respectively.

The nonlinear ARDL model has a big advantage, as it can discover hidden relations between changes in GPR indices and trade flows. Symmetry and asymmetry are defined as when there are the same sign and size of decomposed coefficients of GPR^{+} and GPR^{-} indices. The long-run (W_{LR}) Wald tests are used to make symmetry or asymmetry decisions. We focused on whether $(-\alpha_2/\alpha_1) = (-\alpha_3/\alpha_1)$ and $(-\beta_2/\beta_1) = (-\beta_3/\beta_1)$ or not in the long-run Wald test (Shin et al. 2014: 290).

Empirical Findings

Before running the nonlinear ARDL model, first, we should know the series stationary levels. For this purpose, the ADF unit root test developed by Dickey and Fuller (1979, 1981) was used. The null hypothesis of this test is "*Series has a unit root*." The results are presented in Table 1.

According to the results in Table 1, whereas the REER series are stationary in Russia, India, Brazil, and South Africa, the series are stationary in China (I(0)). Other series are not stationary on their level values, but they are stationary in their first differences (I(1)).

The estimates of the models can be moved. In the process, a maximum of six lags are imposed on each first-differenced variable for each model, and Akaike's Information Criterion is used to select an optimum model. The results of the nonlinear ARDL approach for export, normalized long-run coefficients, and diagnostic test results are presented in Table 2.

Table 2: The Nonlinear ARDL Estimation Results for Export

Variables	Turkey	Mexico	S. Korea	Russia	India	Brazil	China	Indonesia	S. Africa	Argentina	Israel
Short Run-Coefficients											
$\Delta LogX_{t-1}$	-0.31*** (0.00)	-0.23*** (0.00)	-0.27*** (0.00)	-0.11*** (0.00)	-0.36*** (0.00)	-0.33*** (0.00)	-	-	-0.64*** (0.00)	-	-0.65*** (0.00)
$\Delta LogX_{t-2}$	-	0.05*** (0.00)	-	-	-0.11** (0.03)		-	-	-0.41*** (0.00)	-	-0.42*** (0.00)
$\Delta LogGPR_t^+$	-	0.07*** (0.00)	-	-	-	-0.36*** (0.00)	-	-	-	-	0.07** (0.01)
$\Delta LogGPR_{t-2}^+$	-	-	-	-	-	-0.32*** (0.00)	0.60*** (0.00)	-0.12*** (0.00)	-	-	0.12*** (0.00)
$\Delta LogGPR_{t-1}^-$	-	-	-	-0.14*** (0.00)	-	-0.42*** (0.00)	0.08 (0.27)	0.27** (0.00)	-	-0.07*** (0.00)	-0.03 (0.46)
$\Delta LogGPR_{t-2}^-$	-0.18*** (0.00)	-	-	0.14*** (0.00)	-		0.19*** (0.00)	0.31*** (0.00)	0.14*** (0.00)		0.25*** (0.00)
$\Delta LogREER_t$	-	-	-	-	-		-	-	-	-0.42*** (0.00)	0.96*** (0.00)
$\Delta LogREER_{t-3}$	-0.24** (0.04)	-	-	-	-		-	-	-		0.98*** (0.00)
$\Delta LogY_t^w$	3.30*** (0.00)	1.68*** (0.00)	1.40*** (0.00)	1.54*** (0.00)	-	1.21*** (0.00)	-	-	4.89*** (0.00)	0.77*** (0.00)	1.036*** (0.00)
$\Delta LogY_{t-1}^w$	-0.35*** (0.00)	2.76*** (0.00)		1.15*** (0.00)	4.78*** (0.00)	-	-	-02.76*** (0.00)	1.91*** (0.00)	0.95*** (0.00)	0.95 (0.15)
Long-Run Coefficients											
C	-1.72* (0.06)	-4.63*** (0.00)	-3.34*** (0.00)	-0.52* (0.09)	-0.07 (0.95)	-4.30*** (0.00)	-4.96*** (0.00)	-6.61*** (0.00)	-4.82*** (0.00)	-0.45 (0.11)	-0.95 (0.14)
$LogX_{t-1}$	-0.24*** (0.00)	-0.66*** (0.00)	-0.37*** (0.00)	-0.04*** (0.00)	-0.29*** (0.00)	-0.08** (0.02)	-0.54*** (0.00)	-0.65*** (0.00)	-0.20*** (0.00)	-0.04*** (0.00)	-0.20*** (0.00)
$LogGPR_{t-1}^+$	0.03** (0.02)	0.03* (0.07)	0.0001 (0.99)	-0.08*** (0.00)	-0.02 (0.46)	0.01 (0.84)	-0.32*** (0.00)	0.03* (0.09)	-0.06*** (0.00)	-0.03*** (0.00)	-0.14*** (0.00)
$LogGPR_{t-1}^-$	0.03** (0.04)	0.01 (0.46)	-0.003 (0.83)	0.08*** (0.00)	-0.04 (0.21)	-0.002 (0.97)	-0.40*** (0.00)	0.01 (0.43)	-0.07*** (0.00)	-0.03*** (0.00)	-0.14*** (0.00)
$LogREER_{t-1}$	-0.11* (0.05)	-0.25*** (0.00)	0.29 (0.31)	0.01 (0.50)	-0.58** (0.03)	-0.20*** (0.00)	-0.29*** (0.00)	-0.47* (0.08)	-0.18*** (0.00)	-0.04** (0.01)	-0.32*** (0.00)
$LogY_{t-1}^w$	0.58*** (0.00)	1.16*** (0.00)	0.71*** (0.00)	0.12* (0.08)	0.74** (0.03)	1.10*** (0.00)	1.74*** (0.00)	2.16*** (0.00)	0.94*** (0.00)	0.18*** (0.00)	0.59*** (0.00)
Normalized Long-Run Coefficients											
$LogGPR_t^+$	0.14* (0.08)	0.05 (0.10)	0.0004 (0.99)	-1.89*** (0.00)	-0.08 (0.48)	0.18 (0.84)	-0.60*** (0.00)	0.05 (0.10)	-0.33*** (0.00)	-0.74*** (0.00)	-0.71*** (0.00)
$LogGPR_t^-$	0.12 (0.13)	0.02 (0.47)	-0.01 (0.83)	-1.95*** (0.00)	-0.14 (0.24)	-0.03 (0.97)	-0.73*** (0.00)	0.02 (0.44)	-0.34*** (0.00)	-0.73*** (0.00)	-0.72*** (0.00)
$LogREER_t$	-0.48** (0.04)	-0.37*** (0.00)	0.78 (0.25)	0.34 (0.44)	-2.01** (0.03)	-2.57 (0.10)	-0.53*** (0.00)	-0.72* (0.07)	-0.87*** (0.00)	-1.08** (0.01)	-1.61*** (0.00)
$LogY_t^w$	2.39*** (0.00)	1.75*** (0.00)	1.91*** (0.00)	2.68* (0.07)	2.55*** (0.00)	13.69** (0.01)	3.19*** (0.00)	2.29*** (0.00)	4.58*** (0.00)	4.03*** (0.00)	2.94*** (0.00)
Diagnostic Tests											
R^2	0.99	0.99	0.49	0.33	0.82	0.71	0.83	0.88	0.54	0.40	0.82
$\bar{R}^2$	0.98	0.99	0.44	0.31	0.80	0.67	0.83	0.87	0.52	0.38	0.80
F	746.42 (0.00)	9591.45 (0.00)	10.37 (0.00)	16.37 (0.00)	43.09 (0.00)	17.47 (0.00)	168.91 (0.00)	54.14 (0.00)	38.94 (0.00)	22.37 (0.00)	43.94 (0.00)
DW	2.30	1.80	2.11	1.93	1.96	2.04	2.02	2.05	2.04	2.14	2.02
χ^2_{SC}	2.12 (0.34)	0.28 (0.75)	3.43 (0.17)	2.44 (0.09)	0.32 (0.84)	3.13 (0.20)	0.09 (0.95)	0.80 (0.66)	4.91 (0.08)	4.42 (0.10)	12.66 (0.18)
χ^2_{FF}	9.23 (0.07)	6.17 (0.15)	5.34 (0.06)	0.81 (0.37)	0.35 (0.55)	4.31 (0.38)	0.57 (0.45)	0.009 (0.92)	0.18 (0.66)	1.07 (0.12)	0.0002 (0.98)
χ^2_{NOR}	0.30 (0.85)	2.91 (0.23)	5.85 (0.05)	2.24 (0.32)	7.06 (0.29)	4.66 (0.36)	1.21 (0.46)	1.56 (0.39)	8.66 (0.11)	2.18 (0.26)	1.29 (0.15)
χ^2_{HET}	10.34 (0.32)	9.53 (0.48)	11.75 (0.10)	11.74 (0.16)	4.07 (0.85)	13.18	15.71 (0.10)	8.34 (0.59)	2.38 (0.81)	10.31 (0.58)	13.28 (0.20)
F_{PSS}	4.93 (0.02)	5.25 (0.00)	6.37 (0.00)	5.67 (0.00)	4.48 (0.02)	2.98 (0.03)	3.26 (0.00)	5.08 (0.00)	17.20 (0.00)	2.65 (0.09)	9.11 (0.27)
t_{BDM}	-2.99 (0.03)	-2.84 (0.02)	-3.32 (0.01)	-3.36 (0.01)	-3.98 (0.01)	-2.17 (0.04)	-2.00 (0.05)	-3.79 (0.02)	-15.99 (0.00)	-2.38 (0.08)	-2.86 (0.07)
W_{LR}	0.01 (0.42)	0.03 (0.00)	0.01 (0.04)	0.06 (0.10)	0.06 (0.00)	0.21 (0.01)	0.13 (0.00)	0.03 (0.00)	0.02 (0.15)	-0.01 (0.49)	0.007 (0.41)

Note: ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. The values in parentheses are prob. W_{LR} is the long-run Wald tests. *DW denotes the* Durbin-Watson autocorrelation test; χ^2_{SC} is Breusch-Godfrey LM test for autocorrelation; χ^2_{NOR} is the Jarque-Bera test for normality; χ^2_{FF} is Ramsey test for functional form misspecification; χ^2_{HET} denotes Breusch–Pagan–Godfrey heteroscedasticity test. t_{BDM} is the Banerjee, Dolado, and Mestre (1998) cointegration tests' *t*-statistic; F_{PSS} denotes the Pesaran, Shin, and Smith (2001) bounds tests' *F*-statistic. The null hypotheses of BDM and PSS tests are "*No cointegration*". The results of all diagnostic tests are reliable.

Table 3: The Nonlinear ARDL Estimation Results for Import

Variables	Turkey	Mexico	S. Korea	Russia	India	Brazil	China	Indonesia	S. Africa	Argentina	Israel
Short Run-Coefficients											
$\Delta LogM_{t-1}$	-	-	-0.22*** (0.00)	-0.10*** (0.00)	-0.15*** (0.00)	-0.49*** (0.00)	-0.39*** (0.00)	-0.53*** (0.00)	-0.44*** (0.00)	0.35*** (0.35)	-0.22*** (0.00)
$\Delta LogM_{t-4}$	-	-	-	-	-	0.38*** (0.00)	-	0.39*** (0.00)	-0.46*** (0.00)	-	-
$\Delta LogGPR^{+}_{t-1}$	0.13*** (0.00)	-	-	-	-	0.11*** (0.00)	-0.31*** (0.00)	-	0.16*** (0.00)	-	-
$\Delta LogGPR^{+}_{t-2}$	-	-	-	-	-0.20*** (0.00)	0.11*** (0.00)	-0.31*** (0.00)	0.08*** (0.00)	0.14*** (0.00)	0.09*** (0.00)	-
$\Delta LogGPR^{-}_{t}$	-	-	-0.08*** (0.00)	-	-	-	-	0.09*** (0.00)	-	-	0.13*** (0.00)
$\Delta LogGPR^{-}_{t-5}$	0.11*** (0.00)	-	-	-0.06*** (0.00)	-	-	-	-	-	-	-0.14*** (0.00)
$\Delta LogREER_{t}$	-	0.60*** (0.00)	0.72*** (0.00)	0.44*** (0.00)	2.48*** (0.00)	-	-	-	-	-	-
$\Delta LogREER_{t-1}$	0.24*** (0.00)	0.30*** (0.00)	-0.45*** (0.00)	-0.49*** (0.00)	-2.08*** (0.00)	-	-	-	-	-	2.03*** (0.00)
$\Delta LogREER_{t-3}$	-	0.22*** (0.00)	-	-	-	-	-	-0.36*** (0.00)	-1.22*** (0.00)	0.52*** (0.00)	-
$\Delta LogY^{d}_{t}$	0.63*** (0.00)	0.85*** (0.00)	1.07*** (0.00)	-	2.98*** (0.00)	-	-1.85*** (0.00)	-	-	0.39*** (0.00)	1.31*** (0.00)
$\Delta LogY^{d}_{t-1}$	-	-0.93*** (0.00)	-	-	-	0.79*** (0.00)	2.85*** (0.00)	-	-	-	-
$\Delta LogY^{d}_{t-2}$	-	-	-	-	-	-	-	-	-	-0.62*** (0.00)	-
$\Delta LogY^{d}_{t-4}$	-0.31*** (0.00)	-	-	-	-	-	-	-	-	-	-
Long-Run Coefficients											
C	-0.61** (0.03)	-1.64*** (0.00)	-1.08*** (0.00)	-1.83*** (0.00)	-1.33* (0.05)	-1.07*** (0.00)	0.18 (0.65)	-1.51*** (0.00)	-0.34 (0.50)	0.53*** (0.00)	-2.20*** (0.00)
$LogM_{t-1}$	-0.005** (0.01)	-0.20*** (0.00)	-0.06*** (0.00)	-0.11*** (0.00)	-0.14*** (0.00)	-0.07** (0.01)	-0.06*** (0.00)	0.01 (0.92)	-0.13*** (0.00)	-0.01 (0.12)	-0.56*** (0.00)
$LogGPR^{+}_{t-1}$	-0.04*** (0.00)	0.03*** (0.00)	-0.01 (0.11)	-0.09*** (0.00)	-0.03 (0.32)	-0.04* (0.06)	0.11*** (0.00)	0.03** (0.02)	-0.06* (0.05)	0.05*** (0.00)	-0.05** (0.01)
$LogGPR^{-}_{t-1}$	-0.04** (0.01)	0.03** (0.01)	-0.01 (0.12)	-0.09*** (0.00)	-0.01 (0.60)	-0.04** (0.04)	0.10*** (0.00)	0.03** (0.01)	-0.06* (0.05)	0.06*** (0.00)	-0.05** (0.01)
$LogREER_{t-1}$	0.08*** (0.00)	-0.001 (0.95)	0.20*** (0.00)	0.11*** (0.00)	-0.08 (0.56)	0.11*** (0.00)	-0.04 (0.49)	0.19*** (0.00)	0.03 (0.66)	-0.11*** (0.00)	-0.23*** (0.00)
$LogY^{d}_{t-1}$	0.07 (0.00)	0.48*** (0.00)	0.08*** (0.00)	0.37*** (0.00)	0.53*** (0.00)	0.14** (0.01)	0.05 (0.20)	0.16** (0.01)	0.07 (0.16)	0.01 (0.48)	0.93*** (0.00)
Normalized Long-Run Coefficients											
$LogGPR^{+}_{t}$	-0.76* (0.05)	0.18*** (0.00)	-0.28 (0.12)	-0.85*** (0.00)	-0.20 (0.31)	-0.53 (0.14)	1.77** (0.03)	-2.09 (0.91)	-0.47** (0.04)	2.97*** (0.00)	-0.09** (0.01)
$LogGPR^{-}_{t}$	-0.80** (0.04)	0.14** (0.01)	-0.27 (0.13)	-0.84*** (0.00)	-0.11 (0.59)	-0.59 (0.11)	1.63* (0.05)	-2.24 (0.91)	-0.47** (0.04)	3.14** (0.03)	-0.09** (0.01)
$LogREER_{t}$	1.48*** (0.00)	-0.004 (0.95)	3.42*** (0.00)	0.97*** (0.00)	-0.57 (0.55)	1.45*** (0.00)	-0.76 (0.48)	-11.34 (0.92)	0.23 (0.64)	-6.99 (0.37)	-0.42*** (0.00)
$LogY^{d}_{t}$	1.17*** (0.00)	2.31*** (0.00)	1.34*** (0.00)	3.25*** (0.00)	3.67*** (0.00)	1.88*** (0.00)	0.88 (0.18)	-9.31 (0.92)	0.55 (0.11)	1.17*** (0.00)	1.65*** (0.00)
Diagnostic Tests											
R^2	0.53	0.89	0.77	0.75	0.52	0.71	0.57	0.71	0.70	0.53	0.64
$\bar{R}^2$	0.51	0.89	0.77	0.75	0.50	0.71	0.56	0.70	0.70	0.51	0.63
F	21.54 (0.00)	290.09 (0.00)	116.30 (0.00)	103.53 (0.00)	36.28 (0.00)	84.16 (0.00)	44.66 (0.00)	80.89 (0.00)	79.91 (0.00)	37.56 (0.00)	59.66 (0.00)
DW	1.83	1.81	1.96	2.08	2.24	1.99	1.99	1.91	2.30	1.96	1.93
χ^2_{SC}	0.01 (0.99)	4.05 (0.11)	1.05 (0.25)	2.08 (0.22)	3.25 (0.15)	2.80 (0.18)	3.75 (0.18)	1.97 (0.25)	3.76 (0.17)	3.92 (0.13)	1.08 (0.65)
χ^2_{FF}	0.90 (0.34)	1.44 (0.20)	1.59 (0.21)	1.55 (0.20)	0.46 (0.49)	3.42 (0.30)	1.07 (0.22)	5.02 (0.28)	0.82 (0.36)	6.30 (0.12)	1.53 (0.21)
χ^2_{NOR}	3.77 (0.30)	2.52 (0.44)	1.75 (0.38)	1.44 (0.43)	1.54 (0.42)	3.13 (0.20)	3.44 (0.26)	5.66 (0.17)	5.06 (0.22)	4.25 (0.37)	2.69 (0.43)
χ^2_{HET}	2.53 (0.81)	5.61 (0.28)	2.85 (0.15)	2.85 (0.15)	2.14 (0.85)	1.23 (0.91)	0.98 (0.87)	5.39 (0.31)	2.78 (0.78)	7.89 (0.36)	1.49 (0.71)
F_{PSS}	15.17 (0.00)	4.09 (0.07)	4.03 (0.01)	5.96 (0.00)	5.68 (0.00)	2.94 (0.03)	5.78 (0.00)	9.20 (0.00)	7.06 (0.00)	3.68 (0.01)	4.89*** (0.00)
t_{BDM}	-8.11 (0.00)	-4.83 (0.06)	-5.17 (0.04)	-6.27 (0.00)	-5.05 (0.03)	-2.46 (0.04)	-3.87 (0.01)	-4.55 (0.00)	-5.56 (0.00)	-2.91 (0.03)	-3.09 (0.00)
W_{LR}	0.04 (0.20)	0.03 (0.15)	-0.008 (0.49)	-0.01 (0.40)	-0.09 (0.20)	0.06 (0.17)	0.13 (0.15)	1.50 (0.91)	0.001 (0.89)	-0.17 (0.32)	-0.0005 (0.12)

Note: ***, **, and * denote statistical significances at the 1%, 5%, and 10% levels, respectively. The values in parentheses are prob. W_{LR} is the long-run Wald tests. *DW* denotes the Durbin–Watson autocorrelation test; χ^2_{SC} is the Breusch–Godfrey LM test for autocorrelation; χ^2_{NOR} is the Jarque–Bera test for normality; χ^2_{FF} is the Ramsey test for functional form misspecification; χ^2_{HET} denotes the Breusch–Pagan–Godfrey heteroscedasticity test. t_{BDM} is the Banerjee, Dolado, and Mestre (1998) cointegration tests' *t*-statistic; F_{PSS} denotes the Pesaran, Shin, and Smith (2001) bounds tests' *F*-statistic. The null hypotheses of BDM and PSS tests are "*No cointegration*." All the results of the diagnostic test are reliable.

According to the findings presented in Table 2, in the short term, geopolitical risks, real effective exchange rate, and world income might affect the countries' exports in different directions. However, in the long term[5], shocks that increase geopolitical risks decrease exports in Turkey, Russia, China, South Africa, Argentina, and Israel, whereas shocks that reduce the GPR increase exports in Russia, China, South Africa, Argentina, and Israel. Among these countries, the following are the possible reasons behind the result of the following countries: for Russia, economic enforcements that are occasionally applied by the European countries against it due to the policies that it has implemented in Ukraine, Chechenia, and the Middle East; for China, it is the economic pressures that are applied by the US due to exchange rate policies of China; for Israel, boycotts that are occasionally applied by Turkey and Arabic countries to its products due to its use of disproportionate force on the Palestinians. To increase their exports, these countries should try to decrease their GPR levels. We find that GPR does not have any statistically significant effect on export in Mexico, South Korea, India, Brazil, and Indonesia, and these results are due to the following reasons: for Mexico, the low demand flexibility of the US citizens toward cheap Mexican goods; for South Korea, it exports high-tech products; for Brazil, it is a natural resource exporter. According to the W_{LR} test, the effects of geopolitical risks on export are symmetrical in Turkey, Russia, South Africa, Argentina, and Israel, whereas they are asymmetrical in other countries.

Consistent with the theory of economics, increases in the real effective exchange rate decrease exports in Turkey, Mexico, India, China, Indonesia, South Africa, Argentina, and Israel. Then, these countries might increase their exports by following competitive exchange rate policies. The increase in world income is based on the increase in the exports of all countries, and the highest effect is observed in Brazil.

The results of the nonlinear ARDL approach for import, normalized long-run coefficients, and diagnostic tests are presented in Table 3.

According to the findings presented in Table 3, in the short term, geopolitical risks, real effective exchange rate, and world income affect the imports of the countries in different directions. In the long term, factors that increase geopolitical risks reduced imports in Turkey, Russia, South Africa, and Israel, whereas they increased imports in Mexico, China, and Argentina. We find that protectionist policies have gained importance in countries where import decreases against an increase in GPR, whereas policies that provide supply security have gained importance in countries where import increases against an increase in GPR. By using the test, we find that the effects of geopolitical risks on import are symmetrical in all countries.

The increase in real effective exchange rate increased imports in Turkey, South Korea, Russia, Brazil, and Indonesia, which is consistent with the theory of economics, whereas it decreased imports in Argentina and Israel, which is contrary to the theory of economics. Therefore, Turkey, South Korea, Russia, Brazil, and Indonesia can decrease their imports by depreciated their national currency. The increase in countries' national incomes statistically significantly increases the imports in the countries, excerpt for China[6], Indonesia, and South Africa.

CONCLUSIONS

In this study, the effects of geopolitical risks on countries' trade flows are examined with the nonlinear ARDL method by using the monthly data of 11 countries whose regular data could be accessed from January 1993 to August 2021. According to the findings, in the short term, geopolitical risks, real effective exchange rate, and world income affect the exports and imports of the countries in different directions. However, in the long term, positive geopolitical risk shocks reduced exports in Turkey, Russia, China, South Africa, Argentina, and Israel, whereas they reduced imports in Turkey, Russia, South Africa, and Israel. The shocks that decreased GPR increased export in Russia, China, South Africa, Argentina, and Israel, whereas they increased imports in Mexico, China, and Argentina. It was determined that the effects of geopolitical risks on exports are symmetrical in Turkey, Russia, South Africa, Argentina, and Israel, whereas they are asymmetrical in Mexico, South Korea, India, Brazil, China, and Indonesia. Moreover, the effects of geopolitical risks on imports are symmetrical in all countries. Increases in the real effective exchange rate decreased exports in Turkey, Mexico, India, China, Indonesia, South Africa, Argentina, and Israel, whereas they increased imports in Turkey, South Korea, Russia, Brazil, and Indonesia and decreased imports in Argentina and Israel. Increases in the world income increased exports of all countries, whereas an increase

[5] According to the normalized long-term coefficients.

[6] The increase in national income in China is expected to increase import more in the future. Because there are rapidly increasing number of middle-income people (more than 400 million) and their disposable income in China (Siqi, 2020), it is possible that these people will be inclined to luxury imported consumption goods in the near future, thereby increasing the China's total imports (Zipser and Poh, 2020).

in the countries' own national income increased imports in Turkey, Mexico, South Korea, Russia, India, Brazil, Argentina, and Israel.

Within the framework of these results, particularly for developing countries, it will be useful to decrease their geopolitical risks to be able to organize their foreign trade flows positively. To minimize the effects of geopolitical risks that are not under their own control, it will be a wise approach for countries to focus on producing and selling high-tech products with low external demand flexibility. To be able to avert the effects of geopolitical risks on import fluctuations, these countries should establish solid supply chains in production and consumption and apply resource diversifications, especially in areas, such as energy, food, and health materials (e.g., the COVID-19 vaccine).

Pursuing policies to decrease real effective exchange rates will positively affect the countries' external trade competition powers. Thus, it will be helpful to keep the value of their national currencies and general price levels at low levels. However, it is difficult to improve foreign trade in the long run only with the implementation of foreign exchange policies. Moreover, for the governments, consciously keeping the foreign exchange rates at high levels might also bring international discussions and problems, as in the case of China and the US. In addition, it should be also remembered that high foreign exchange rates decrease the purchasing power of the residents and make them relatively poor. Therefore, it will be more appropriate for countries to concentrate on the production of high-value-added products.

The additional export opportunities that are provided by the increase in world income should be also utilized. Thus, countries should plan their production according to the business cycles related to the world economic growth in order not to miss the possible opportunities. To achieve this purpose, the Baltic Dry Index, which measures the dry bulk transportation cost in the world, can be followed as a leading indicator of future direction in the economy.

In addition to the increase in national income, countries should control their imports and current account deficits for them not to increase extremely, since an extreme increase in current account deficit can drag the countries into an economic crisis. Therefore, taxes on the import of final consumption goods can be increased to direct demand toward domestic goods, and external dependence on the production inputs of energy, intermediate goods, and capital goods can be minimized.

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