CLIMATE CHANGE PERCEPTION AND THE INFORMATION SOURCES USED BY MAIZE PRODUCTION FARMERS

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Abstract

While 3.54 billion people lived in the world in 1950, this number reached 7.78 billion in 2020. The increase in human activities due to the rapidly increasing world population increases the share of greenhouse gases in the atmosphere and causes climate change by causing global warming. Today, climate change is increasing its impact and sectors are negatively affected. Agriculture is a sector that both affects and is affected by climate change. Due to climate change, soil and water resources are damaged, agricultural production decreases and food security is endangered. Farmers' willingness and ability to adapt to climate change depend on their knowledge of climate change. This information is closely related to the information sources used by the farmers. In the study, the perception of climate change of farmers producing corn will be determined and the information sources used will be examined. 27% of the maize produced in the world is used in human nutrition and 73% is used as animal feed. Therefore, the perception of climate change and the information sources used are very important in maize producers. In the study, the sample size was determined as 77 with a 95% confidence interval and a 5% margin of error, according to the stratified sampling method, which is one of the simple random sampling methods. The questions about the climate change of the maize producers were analyzed with the Likert type scaling method. Agricultural enterprises perceive climate change as drought (4.78), global warming (4.65) and seasonal change (4.61). Looking at the information sources used, neighboring farmers, family members (4.61), television (3.79) and internet (3.78) were identified. Leading farmers in the research area should be informed about climate change. In addition, information that will raise awareness about climate change should be included on television and the internet.

Keyword: *Maize production, Climate change, Information source*

1. INTRODUCTION

While 3.54 billion people lived in the world in 1950, this number reached 7.78 billion in 2020 [1]. Throughout history, the interaction between people and nature has continued [2]. As a result of this interaction, environmental problems have emerged [3]. Especially with the migrations that started with the industrial revolution, population growth accelerated and became irregular. Therefore, many problems have occurred in the cities. Greenhouse gas emission is one of these problems. With the increase in greenhouse gas emissions, global climate change has emerged [4]. Climate is one of the main factors behind cultural development. Its scope and causes are discussed every day [5,6,7,8,9,10,11]. The climate has been changing since the existence of the Earth. However, nowadays, it is happening very quickly with human activities [12]. According to IPCC 51, it proves that the average temperature increases are due to human activities [13]. According to the United Nations Framework Convention on Climate Change (UNFCCC), “Climate change is a change in climate as a result of human activities that directly or indirectly degrade the composition of the global atmosphere, in addition to natural climate change observed over comparable time periods” [14]. Since the pre-industrial period, due to the use of fossil fuels, industrialization, population growth, urbanization, misuse of lands, agricultural and livestock activities, deforestation, cement production, and wastes, anthropogenic (such as Carbon Dioxide (CO2), Methane (CH4), Diazot Monoxide (N2O)) The concentrations of greenhouse gas emissions (human-induced) in the atmosphere are greatly increasing [13,15].

Agriculture is a sector that both affects and is affected by climate change. Due to climate change, soil and water resources are damaged, agricultural production decreases, and food security is endangered [16,17]. Agricultural production techniques, planting, and harvesting dates change with climate changes

[18,19,20,21]. In some studies, it has been determined that agricultural yields are significantly reduced at high temperatures and the predicted losses in production are very large in future climatic conditions, even when long-term adaptation is taken into account [22,23,24,25,26]. This impact on agriculture can have profound consequences for societies, especially in developing countries like Turkey, as it brings greater impact and reaction on health, human capital, migration, and labor markets [27,28,29,30]. By adjusting planting and harvesting times, farmers can adapt to the changing climate [31]. Farmers' willingness and ability to adapt to climate change depends on their knowledge of climate change. This information is closely related to the information sources used by the farmers. In the study, the perception of climate change and the information sources used by corn producers were determined.

2. MATERIALS AND METHODS

Maize production enterprises operating in Konya province formed the main population of the study. The records of the Konya Provincial Directorate of Agriculture and Forestry were used to determine the population. In the selection of the sample district, the Çumra district, which constitutes 15.76% of the corn production in Konya province, was selected according to the purposive sampling method. In the research, a stratified sampling method was used in order to increase the accuracy of the findings to be collected from the enterprises and to ensure adequate representation of different parts of the population [32]. In the study, the sample size was determined as 77 with a 95% confidence interval and a 5% margin of error. The number of samples to be studied according to the stratified random sampling method was calculated using the formula below [33].

$$n = \frac{\Sigma (N_h.S_h)^2}{N^2 D^2 + \Sigma N_h.S^2_h} \qquad D^2 = d^2 / z^2$$

In the formula;

n : Number of samples,

N : Number of enterprises in the population,

Nh: the number of enterprises in the hth layer,

S2h: variance of the hth layer,

d : Allowable margin of error from the population mean,

z : It refers to the z value in the standard normal distribution table according to the error rate.

Enterprises Width Groups	Sample Size (number)
0-29	4
30-99	28
100-+	45
Total	77

Table 1. Distribution of businesses producing corn (Sample Volume)

Age, education, social security, land assets, and grown products of businesses are given with simple percentage calculations on social media. Perception of climate change in businesses and information sources used are given on a 5-point Likert scale. The Likert (1932) [34] type attitude scale, developed by Rensis Likert, is an easy method that is widely preferred in measuring attitudes. The basic approach

in the Likert scale is to make judgments about the researched subject and to evaluate and rate the concentration on these judgments. Likert scales consist of statements that indicate a person's feelings, thoughts, and behaviors regarding a certain attitude object [34,35]. The expressions in the Likert scales are formed in two ways positive and negative. A positive expression indicates the desired state, that is, the presence of a positive attitude towards the attitude object. Negative expression is undesirable, which reflects the negative state of the attitude object. In Likert scales, these positive and negative situations are expressed with an equal number of items. [35]. The score obtained from a scale suitable for the Likert type or "rating totals" technique generally consists of the sum of the scores given to the responses to the items in the scale [36]. Using a five-point response set, Likert aimed to determine the attitudes of individuals according to their own statements, based on individuals' expressing their views on the measured attitude object from 1 to 5 [37].

3. RESEARCH FINDINGS

The effects and consequences of climate change affect our lives perceptibly, causing damage to living species and deterioration of human health as a result of epidemics, drought, erosion, desertification, displacement of climate zones, increase in severe weather events, rise in sea level, deterioration of natural balance. This situation leads to undesirable results by directly or indirectly affecting socio-economic sectors and ecological systems [38]. Therefore, in the study, the age, education, social security, and agricultural production status of the enterprises were interpreted. The age status of the enterprises is given in Table 2. It has been determined that 66.23% of the farmers producing corn are 50 years old and over, and the active working age of 15-49 is 33.77%. The fact that the active population is high and operating in the agricultural sector is a positive indicator of future expectations. It is determined that the young population in agricultural enterprises is decreasing day by day [39,40,41].

		1. Layer		2. Layer		3. Layer		Total	
		Number	%	Number	%	Number	%	Number	%
Age	15-49	2	50.00	10	35.71	14	31.11	26.00	33.77
	50-+	2	50.00	18	64.29	31	68.89	51.00	66.23
	Total	4	100.00	28	100.00	45	100.00	77.00	100.00

Table 2. Age Status of Businesses

Generally, low education levels in rural areas cause intense migration of the young population to urban areas. People with a high level of education are generally called the young population. The high level of education also facilitates the follow-up of innovations and makes it possible to see opportunities in agriculture. Due to this situation, the future expectations of the operators will also be positively affected. It was determined that 45.45% of the producers in the examined enterprises were high school graduates, 29.87% from primary school, 20.78% from secondary school, and only 3.90% were university graduates.

	1. Layer		2. Layer		3. Layer		Total	
	Number	%	Number	%	Number	%	Number	%
Education	Primary school	1	25.00	7	25.00	15	33.33	23.00	29.87
	Middle School	1	25.00	9	32.14	6	13.33	16.00	20.78
	High school	2	50.00	10	35.71	23	51.11	35.00	45.45

University	0	0.00	2	7.14	1	2.22	3.00	3.90
Total	4	100.00	28	100.00	45	100.00	77.00	100.00

Table 3. Educational Status of Enterprises

The social security status of the producers is shown in Table 4. It has been determined that 42.86% of the farmers are affiliated with BAĞKUR and 38.96% with SGK. Retired persons constitute 18.18% of the enterprises. Differences in social security status can be observed between layers.

		1. Layer		2. Layer		3. Layer		Total	
		Number	%	Number	%	Number	%	Number	%
Social Security	SSI	2	50.00	14	50.00	14	31.11	30.00	38.96
	SSO	2	50.00	8	28.57	23	51.11	33.00	42.86
	Retired	0	0.00	6	21.43	8	17.78	14.00	18.18
	Total	4	100.00	28	100.00	45	100.00	77.00	100.00

Table 4. Social Security Status of Businesses

One of the important factors affecting future expectations in agriculture is production patterns. The production pattern plays an important role in increasing the economic profit of the enterprise. The production patterns of the examined enterprises are given in Table 5. 8 different production patterns were determined in the enterprises and differences were revealed in terms of enterprise layers. While 60.56% of the enterprises in the 1st layer are wheat, it is seen that sugar beet with a share of 32.22% in the 2nd layer and corn with 55.53% in the 3rd layer is predominantly planted. It has been determined that 48.51% of the enterprises are mainly cultivated with corn and this situation is with 16.79% sugar beet.

	1. Layer		2. Layer		3. Layer		Enterprises Average	
	ha	%	ha	%	ha	%	ha	%
Wheat	13.63	60.56	3.25	17.70	5.35	13.89	5.01	16.53
Barley	3.13	13.89	2.29	12.48	3.80	9.89	3.22	10.61
Sugar beet	0.63	2.78	5.92	32.22	4.97	12.93	5.09	16.79
Sunflower	0.94	4.17	0.47	2.58	0.72	1.86	0.64	2.11
Maize (Silage)	0.00	0.00	0.18	0.97	1.09	2.83	0.70	2.31
Maize	1.94	8.61	5.85	31.87	21.37	55.53	14.72	48.51
Bean	2.25	10.00	0.40	2.18	1.18	3.07	0.95	3.14
Total	22.50	100.00	18.37	100.00	38.47	100.00	30.33	100.00

Table 5. Land Use Status of the Investigated Enterprises

In general, all agricultural crops need soil, water, sunlight and warmth to grow. Climate is a dynamic component that affects all of the listed components. For this reason, the risk it creates for the agricultural sector is at a very high level due to the unknowns it contains [38].

The effects of climate change on agriculture have multiple effects. Some of them are given below.

• Warmer and less rainy climatic conditions

• Increase in extreme meteorological events

• Reduction in water resources

• Increase in drought severity

• Deterioration of water and soil quality

• Degradation of the ecosystem and reduction of biodiversity

• Shift in ecological areas

• Reduction in agricultural production and quality

• Increase in pests and diseases

• Fertilization and spraying problems

• Sustainable food safety issues [38].

In the study, the climate change perception of the enterprises producing corn in the Çumra district of Konya province was determined using a 5-point Likert scale. Table 6 the climate change perception of the embroideries is given.

	1. Layer	2. Layer	3. Layer	Enterprises Average
Drought	4.75	4.71	4.82	4.78
Global warming	5.00	4.71	4.58	4.65
Change of seasons	4.75	4.71	4.53	4.61
Disruption of the precipitation regime	3.75	3.86	4.33	4.13
Air pollution	4.25	3.54	3.76	3.70
Environmental pollution	4.75	3.04	3.49	3.39
Depletion of the ozone layer	3.50	3.14	3.29	3.25
Experiencing disasters	2.00	2.68	2.89	2.77
5: Strongly agree 4: Agree 3: Undecided 2: Disagree 1: Strongly disagree				

Table 6. Climate Change Perception of Businesses

Maize-producing businesses perceive climate change as drought (4.78), global warming (4.65), and seasonal change (4.61). Looking at the layers, Layer 1 perceives it as global warming, drought, change of seasons, and environmental pollution. Layer 2 perceives it as drought, global warming, and the change of seasons. Layer 3 perceives it as drought, global warming, change of seasons, and deterioration of precipitation regime.

	1. Layer	2. Layer	3. Layer	Enterprises Average
Spraying	3.75	3.86	4.00	3.94
Excessive irrigation	3.75	4.07	3.87	3.94
Agricultural waste	4.50	3.32	3.80	3.66
Fertilization	3.25	3.75	3.53	3.60
Stubble burning	3.75	3.79	3.38	3.55
Improper tillage	4.50	3.21	2.98	3.14
Greenhouses	2.50	3.18	3.13	3.12
Choosing the wrong production pattern	4.75	2.96	2.87	3.00
No idea	0.25	0.61	0.38	0.45
5: Strongly agree 4: Agree 3: Undecided 2: Disagree 1: Strongly disagree				

Table 7. Agricultural activities that businesses believe are causing climate change

Considering the agricultural activities that the enterprises think cause climate change, it has been determined that there are pesticides, excessive irrigation, agricultural wastes, and fertilization. According to the layers, the activities that cause climate change in the first layer were determined as choosing the wrong production pattern, agricultural wastes, wrong soil cultivation, spraying, excessive irrigation, and stubble burning. In the second layer, the activities that cause climate change are determined as excessive irrigation, spraying, stubble burning, and fertilization. In the third layer, the activities that cause climate change are determined as spraying, excessive irrigation, agricultural wastes, and fertilization.

	1. Layer	2. Layer	3. Layer	Enterprises Average
Own family members	5.00	4.25	4.80	4.61
Frequency of meeting with other farmers in the village	4.00	4.43	4.78	4.61
TV viewing frequency	3.00	3.61	3.98	3.79
Internet usage frequency	1.50	2.79	4.60	3.78
Frequency of going to the town center	3.75	3.89	3.29	3.53
Frequency of going to the city center	3.75	3.68	2.82	3.18
Dealers selling pesticides	3.25	3.14	3.04	3.09
Agricultural implements and machinery dealer	3.50	2.79	2.67	2.75
A private organization that buys products (merchant)	2.25	2.54	2.82	2.69
Frequency of visiting agricultural engineers, veterinarians, technicians, etc. In the Agriculture Provincial/District directorate	2.25	2.82	2.47	2.58
Government agency purchasing the product	2.00	2.11	2.64	2.42
Agricultural engineers	2.75	2.43	2.36	2.40

Frequency of reading newspapers, magazines, magazines	3.25	2.61	1.98	2.27
Radio listening frequency	1.25	2.68	2.09	2.26
Chambers of Agriculture	2.50	2.14	2.22	2.21
Troops	2.50	2.11	2.11	2.13
Cooperatives	2.75	2.18	2.02	2.12
Attending a conference meeting field day on any agricultural topic	1.75	2.11	2.07	2.06
Participate in any educational activity on maize cultivation	1.50	1.82	1.84	1.82
Interview with Faculty of Agriculture staff	2.00	1.93	1.60	1.74
5: Always 4: Often 3: Sometimes 2: Rarely 1: Never				

Table 8. Sources of Information for Businesses on Climate Change

Looking at the information sources used, neighboring farmers, family members (4.61), television (3.79), and the internet (3.78) were identified. Leading farmers in the research area should be informed about climate change. In addition, information that will raise awareness about climate change should be included on television and the internet.

4. CONCLUSION AND RECOMMENDATIONS

Agriculture is the sector that both affects and is affected by climate change. It is an industry that causes. The agricultural sector is one of the sectors most affected by and causing climate change in terms of crop productivity, crop pattern, decreasing water resources, increasing temperature and food security [39]. Although the temperature increases and the increasing amount of carbon dioxide resulting from climate change seem to have a positive effect on the amount of agricultural products in some regions in the short term, these components may cause reductions in product quality and production in the long run [42]. In the study, corn producers perceive climate change as drought (4.78), global warming (4.65), and seasonal change (4.61). The risk posed by climate change to the agricultural sector is at a very high level due to the unknowns it contains. Climate is one of the factors that directly affect agricultural production [39]. In addition, when the agricultural activities that are thought to cause climate change are examined, it has been determined that there are pesticides, excessive irrigation, agricultural wastes, and fertilization. Looking at the organizations from which businesses receive information on climate change, neighboring farmers, family members (4.61), television (3.79), and the internet (3.78) were identified. Leading farmers in the research area should be informed about climate change. While raising awareness about climate change, individual, group, and mass dissemination methods should be used. In particular, information that will raise awareness about climate change should be included in the mass media such as television and the internet.

REFERENCES

1. FAO, 2022. https://www.fao.org/faostat/en/#data/OA (Accessed date: 15.04.2022).
2. Messerli, B Grosjean, M Hofer, T Nunez, L Pfister, C 2000, From nature-dominated to human-dominated environmental changes. Quaternary Science Reviews 19, 459–479.
3. Berglund, BE 2003, Human impact and climate changes—synchronous events and a causal link?. *Quaternary International*, *105*(1), 7-12.

4. Aydoğdu, G 2020, İklim değişikliği ve tarımsal uygulamalar etkileşimi. *Ondokuz Mayıs Üniversitesi İnsan Bilimleri Dergisi*, *1*(1), 43-61.
5. Lamb, HH 1981, An approach to the study of the development of climate and its impact in human affairs. In: Wigley, T.M.L.,Ingram, M.J., Farmer, G. (Eds.), Climate and History. Cambridge University Press, Cambridge, pp. 291–309.
6. Lamb, HH 1982, Climate, History and the Modern World. Methuen, London, 387pp
7. Barker, G 1985, Prehistoric Farming in Europe. Cambridge University Press, Cambridge, 327pp.
8. Mannion, A.M., 1991. Global Environmental Change. Longman Scientific and Technical, Hong Kong, 404pp.
9. Bell, M Walker, MJC 1992, Late Quaternary Environmental Change: Physical and Human Perspectives. Longman Scientific and Technical, Essex, 273pp.
10. Roberts, N 1998, The Holocene: An Environmental History. Black-well, Oxford, 316pp
11. Jager, K-D 1999, Ur- und fr .uhgeschichtliche Klimabeeinflussung durch Intensit.atsunterschiede agrarischer Landnutzung? Beitr.agezur Ur- und Fr .uhgeschichte Mitteleuropas 20, 515–522.
12. Kadıoğlu, M 2012, Türkiye'de İklim Değişikliği Risk Yönetimi. Türkiye'nin İklim Değişikliği II. Ulusal Bildiriminin Hazırlanması Projesi Yayını, Ankara.
13. Anonymous, 2014, Intergovernmental Panel on Climate Change 2014: Synthesis report. contribution of working groups I, II and III to the fifth assessment report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauriand L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp.
14. Anonymous, 1994, Birleşmiş Milletler İklim Değişikliği Çerçeve Sözleşmesi.https://webdosya.csb.gov.tr/db/iklim/webmenu/webmenu12421_1.pdf
15. Türkeş, M 2001, Küresel İklimin Korunması, İklim Değişikliği Çerçeve Sözleşmesi ve Türkiye. Tesisat Mühendisliği, TMMOB Makina Mühendisleri Odası, Süreli Teknik Yayın 61, ss:14-29.
16. Lobell, DB Burke, MB Tebaldi, C Mastrandrea, MD Falcon, WP and Naylor, RL 2008, Prioritizing climate change adaptation needs for food security in 2030. *Science*, *319*(5863), 607-610.
17. IPCC, 2014, Climate Change 2014: Synthesis report. Working Paper, Intergovernmental Panel on Climate Change.
18. Postigo, JC 2014, Perception and resilience of Andean populations facing climate change. *J. Ethnobiol.* 34, 383–400. doi: 10.2993/0278-0771-34.3.383
19. Konchar, KM Staver, B Salick, J Chapagain, A Joshi, L Karki, S Lo, S Paudel, A Subedi, P and Ghimire SK 2015, Adapting in the shadow of Annapurna: a climate tipping point. *J. Ethnobiol.* 35, 449–471. doi: 10.2993/0278-0771-35.3.449
20. Abidoye, BO Kurukulasuriya, P and Mendelsohn R 2017, South-East Asian farmer perceptions of climate change. *Clim. Change Econ.* 8:1740006. doi: 10.1142/S2010007817400061
21. Thornton, PK Whitbread, A Baedeker, T Cairns, j Claessens, L Baetgen, W Bunn, C Friedmann, M Giller, KE Herrero, M Howden, M Kilcline, K Nangia, V Ramirez-Villegas, J Kumar, S West, PC and Keating, B 2018, *Towards Climate-Smart Agricultural Policies and Investments in Telangana.* CGIAR Research Program on Climate Change, Agriculture and Food Security. Available online at: hdl.handle.net/10568/90627
22. Schlenker, W and Roberts MJ 2009, Nonlinear Temperature Effects Indicate Severe Damages to US Crop Yields under Climate Change. Proceedings of the National Academy of Sciences of the United States of America 106: 15594–8.
23. Burke, M and Emerick, K 2016, Adaptation to climate change: Evidence from US agriculture. *American Economic Journal: Economic Policy*, *8*(3), 106-40.

24. Chen, S Xiaoguang, C and Jintao, Xu 2016, Impacts of Climate Change on Agriculture: Evidence from China. Journal of Environmental Economics and Management 76: 105–24.

25. Gammans, M Pierre, M and Ariel, OB 2017, Negative Impacts of Climate Change on Cereal Yields: Statistical Evidence from France. Environmental Research Letters 12: 054007.

26. Chen, S and Binlei, G 2021, Response and Adaptation of Agriculture to Climate Change: Evidence from China. Journal of Development Economics 148: 102557.

27. Cattaneo, C and Giovanni, P 2016, The Migration Response to Increasing Temperatures. Journal of Development Economics 122: 127–46.

28. Springmann, M Mason-D'Croz, D Robinson, S Garnett, T Godfray, HCJ Gollin, D DPhil, MR Ballon P and DPhil, SP 2016, Global and regional health effects of future food production under climate change: a modelling study. *The Lancet*, *387*(10031), 1937-1946.

29. Garg, T Maulik, J and Vis, T 2020, Temperature and Human Capital in India. Journal of the Association of Environmental and Resource Economists 7: 1113–50.

30. Huang, K Hong, Z Jikun, H Jinxia, W and Christopher, F 2020, The Impact of Climate Change on the Labor Allocation: Empirical Evidence from China. Journal of Environmental Economics and Management 104: 102376.

31. Cui, X and Xie, W 2022, Adapting agriculture to climate change through growing season adjustments: Evidence from corn in China. *American Journal of Agricultural Economics*, *104*(1), 249-272.

32. Güneş, T and Arıkan, R 1985, Agricultural Economics Statistics. Ankara University Faculty of Agriculture Journal, 924.

33. Yamane, T 1967, Elementary sampling theory. Englewood Cliffs, New Jerse: Prentice-Hall Inc.

34. Likert, R 1932, A technique for the measurement of attitudes. *Archives of psychology*.

35. Anderson, LW 1988, Attitude measurement: Attitudes and their measurement. Educafional research methodology, and measurement: An internafional handbook. *Educational Research Methodology and Measurement An International Handbook, Pergamon Press/New York https://searchworks. stanford. edu/view/3784199*.

36. Tezbaşaran, A 2008, Likert tipi ölçek hazırlama kılavuzu. *Ankara: Türk Psikologlar Derneği Yayınları*, 27-48.

37. Oppenheim, AN 2000, *Questionnaire design, interviewing and attitude measurement*. Bloomsbury Publishing.

38. Anonymous 2022, https://www.tarimorman.gov.tr/TRGM/Belgeler/%C4%B0klim%20De%C4%9Fi%C5%9Fikli%C4%9Fi%20ve%20Tar%C4%B1m.pdf (Accessed date: 10.02.2022).

39. Anonymous, 2021, https://www.tarimorman.gov.tr/TRGM/Belgeler/IKLIM%20DEGISIKLIGI%20VE%20TARIM%20DEGERLENDIRME%20RAPORU.pdf (Accessed date: 10.02.2022).

40. Karahan Uysal, Ö 2015, Manisa İli Yunt Dağı Köylerinde Çiftçilerin Tarımsal Üretime Yaklaşımlarını Etkileyen Faktörlerin Analizi. *Journal of Social Sciences & Humanities Researches*, (35).

41. Davran, MK Özalp, B Yok, N and Öztornaci, B 2017. Türkiye'de kırsal gençlik açısından istihdam ve tarımsal istihdamın geleceği. *Gençlik Araştırmaları Dergisi*, *5*(13), 169-199.

42. Aksu, H 2018, Konya ili Taşkent ilçesinin kırsal kalkınma potansiyelinin GZFT analizi ile belirlenmesi.

43. Akalın, M 2014, İklim değişikliğinin tarım üzerindeki etkileri: bu etkileri gidermeye yönelik uyum ve azaltım stratejileri. *Hitit Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, *7*(2), 351-377.