# A Comparison of Ethical Perspectives in Business in Turkish Ahilik Society and American Marketing Association

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**Abstract:** "Ahilik" is the name of a society which had played a crucial role on social, economic and cultural life of Anatolian people from 13th century to today. The ethical principles established by this society have had significant effects on commercial life in Turkish territories throughout history. The teachings of Ahilik can be found in 'Futuvvetnames' which are the books that include basic moral rules and principles of commerce such as fellowship, helpfullness, honesty and tolerance. These set of principles are still significant in today's business life in Turkey. On the other hand, today's widespread ethical business organizations. The Ethical Codes of American Marketing Association are one of the most well known ethical codes in current business terminology. The purpose of this study is to analyze the similarities and differences between the moral rules of 'Ahilik' and ethical norms and values of American Marketing Association.

Keywords: Business Ethics, American Marketing Association, Ahilik Society, Turkish Culture

# Introduction

Ethics is "a philosophy or a science of morality that investigates how human beings should manage their individual and social relationships in order to determine good and bad with respect to their behaviors" (Demir and Acar, 1997, p.14). Morality can be described as "a guide that navigates the person and the society within the framework of good and bad" (Torlak, 2007, p.84-85). Although morals and ethics seem to have the same meaning, essentially they are different. While ethics, as a field of philosophy, is a philosophical thought about problems of moral judgements, morals are a sum of rules of behaviors in a society (Torlak, 2007) These rules of behaviors have always been very important for many societies in human history. It is commonly believed that societies that protected and applied ethical rules in governence and daily lives had reached higher social and economic standards for a long period of time, while those who did not apply these rules soon disappeared. Turks who had come from Middle Asia to Anatolia are one people that succeeded to implement ethical rules based on morals of Islam in every segment of society. They founded the well-known Ottoman Empire that reigned 600 years in major parts of the world. Ottoman ruling was effective in three continents for about 600 years and this ruling shaped business life of many nations under them. The ethical bases of commerce in Ottoman State was largely determined with the effects of a society called "Ahilik" (Demir, 1994). This society had certain norms and values that shaped business life in Ottoman Empire. Ahilik society has played a crucial role on social, economic and cultural life of Anatolian people from 13th century to today. Although ethical teachings established by Ahilik still have effects in lands where Ottoman State reigned in the past, ethical norms and values are changing fast all over the world especially with the effects of technology.

Well-known approaches to today's business ethics all over the world is largely shaped by worldwide business organizations. These organizations, which represent great number of academics and business people, issue codes of ethics and ask its members to obey these rules in their business practices. One of most popular codes of ethics is issued by American Marketing Association (AMA), which has high credibility in today's business world (Kotler, 2009). AMA is the largest marketing organization in North America that represents most powerful academics, researchers and practitioners from a wide variety of industries. Its roots go back to 1900's and has been effective in American and worldwide business life since then (American Marketing Association, 2009). From this point, a comparison of the ethical understandings of Ahilik society and AMA will shed light into the historical evolution of ethical teachings in human history. Accordingly, the purpose of this study is to analyze the similarities and differences between the ethical principles of Ahilik and the American Marketing Association.

#### **Literature Review**

Since the beginning of the last century, the concept of ethics has gained much significance in academia and in social life. Ethics is becoming even more important as technological advances allow businesses to manipulate most aspects of production and marketing of goods and services. Philosophical bases of ethics goes back in history but scientists put ethical approaches into two categories, one of which is the utilitarian approach and the other is the deontological approach (Beauchamp, 1980).

In a brief discussion about these two approaches to ethics, Nantel and Weeks (1996, p.12) explain that the utilitarian approach relates the concept of ethics with the consequences of an action while the deontological approach relates the ethical behavior with the act itself without looking at the consequences of an action.

According to utilitarian approach, managers attempt to maximize possible positive value or minimize possible negative value of their actions for the people they serve and manage. In that sense, most business actions directed toward certain positive outcomes are utilitarian in nature. These practices are largely evaluated based on their consequences. A typical example is that consumer satisfaction and loyalty are the two main outcomes of good business practices that represent a utilitarian perspective to business ethics. Deontological approach to business ethics, however, focuses on the act itself and value the way the act is taken. In a general sense, for example, lying and stealing are unethical practices regardless of their consequences. Similarly, the way the products are produced and presented to consumers reflect a deontological approach to business ethics. Nantel and Weeks (1996) argued that more and more companies are issuing codes of ethics and this shows the formalization of a deontological approach. Not only companies but also respected business organizations such as American Marketing Association publish codes of ethics in their web sites.

Despite the popularity of ethics as a concept, companies today are accused of many unethical practices by the public. Some of these practices include harming consumers through high prices, deceptive practices, high – pressure selling, shoddy, harmful or unsafe products, planned obsolescence and poor service to disadvantaged consumers (Kotler (2009).

Other writers categorized ethical problems studied in marketing under six categories (Murhy and Laczniak, 1981; Nantel and Weeks, 1996). These include ethical problems studied in the study of consumer behavior, in the product and services management, in advertising management, in marketing research, in price management and in international marketing. Misuse of consumer perception theories by some managers (Nason and Della Bitta, 1983), production of products with limited life span in order to able to benefit from premature repurchasing (Laczniak and Murhy, 1985), appearance of prestigious actors in advertising to endorse products that have little inherent value, abusive use of surveys in marketing research (Tybout and Zaltman, 1974), distortion of the perception of product's price and marketing practices of large tobacco firms towards adolescents were some examples of ethical problems studied previously by marketing researchers (Nantel and Weeks, 1996).

## **Turkish Ahilik Society**

Turkish Ahilik Society was a public institution composed of voluntery members from general public whose main interest was to practice moral and ethical behavior in business. Although it is not active as it used to be, the society is still known well and respected in certain parts of Anatolia. From 13th to 19th century, the society had significant contributions to social life in Anatolia, in Balkans and in Turkistan. The society is known for developing its members in the fields of arts and profession (Demir, 1994). The main properties of Ahilik as a society were showing hospitality to others, giving charity to the poor, teaching profession to youngsters, and enlightening its

members socially and morally in benches and workshops at work during the day and in dervish lodges at night (Ekinci, 2001). The social norms of Ahilik society is largely rooted in the religion of Islam and they were published in the books called "Fütüvvetname". The basis of Ahilik society and its codes of business ethics were recorded in these books. There are two types of rules in Ahilik society: formal and informal rules. Formal rules, which are shaped by the 'futuvve' principles are reflection of Islamic values. For example, 'Striving to be truthful and trusty in work and life' is one example of these rules. As for informal rules, they are behavioral in content and they emerged from the necessity of professional solidarity and relationships within the society. These behavioral norms were determined by the authorities of customs and traditions (Gullulu, 1992). One example of informal rules is that 'Ahi should be honest and not deviate to the way in which he earns more than he deserves.' A person who would join this society had to obey religious and ethical norms that were written in these books.

## Methodology

Ethical norms and values of AMA and Ahilik society were content analyzed and compared to each other in their respective meanings. Content analysis is used in qualitative data analysis to identify themes and recurring patterns of meaning (Merriam, 1998). The purpose of the comparison was to identify similarities and differences between ethical norms and values of AMA and Ahilik society. To achieve this purpose, ethical norms and values were cross-tabulated and items with similar meanings were matched in a table by the researchers. Table 1 shows ethical norms and values of AMA and Ahilik society. The ethical norms and values of AMA were downloaded from AMA website (American Marketing Asociation, 2010) while norms and values of Ahilik society were received from Futuvvetnames. As Table 1 shows AMA has 2 ethical norms and 6 ethical value dimesions with 24 value items in these dimesions. On the other hand, Ahilik society has 4 ethical norms and 39 value items in 6 ethical dimesions. The 39 ethical norms and values of Ahilik society were matched to those of AMA in Table 1 by the researchers based on their similarities in content. Following the categorization of these norms and values, expert opinion was received from 5 researchers as part of an internal validity analysis. Merriem (1998) proposes six methods to check internal validity of qualitative data one of which is peer examination. Researchers who are familiar with both English language and culture and Turkish language and culture were requested to measure similarities and differences between items in Table 1 according to a seven-point scale that ranged from completely the same in content (7) to completely different in content (1). Expertise of reviewers in both language and culture is necessary for valid scale adaptions (Savasir, 1994). The mean values from this analysis is given in Table 1. Finally, the items in ethical norms and values in Ahilik society were translated in English and are given in the last column of Table 1. To assure correct translation expert opinion on these translation were received and necessary adjectments were made.

## Results

Table 1 shows the results of comparison between AMA ethical norms and values, and Ahilik society norms and values. As shown in the Table, items 1a and 1d in honesty dimension were considered similar in content with items 1a1 and 1d in Ahilik society respectively (mean= 6,20; 6,00) whereas items 1b and 1c were found similar with none of the honesty values in Ahilik society. In responsibility dimensions, item 2d and 2d6 were found highly similar (mean= 6,00) while 2c was not found similar with 2c (mean 3,80). Items 2a, 2b and 2e were not found similar with any of the Ahilik society values. In fairness dimension, item 3a was found similar in content with 3a3 and 3a4 (mean= 5,20) as 3b was found highly similar with 3b2 (mean= 6,60). Furthermore, item 3c was found similar with 3c1 and 3c2 (mean= 6,40). In respect dimensions, items 4a, 4b, 4c and 4d were found highly similar with 4a, 4b, 4c and 4d2 respectively (means= 6,00; 6,20;6,00;6,20) while item 4e was found similar with item 4e (mean= 5,40). In transperacy dimension, item 5c was found highly similar with item 5c2 (mean= 6,40) whereas items 5a, 5b, 5d were found not similar with any of the items in Ahilik values. Finally, in citizenship dimension, item 6b was found highly similar with item 6c (mean= 4,80). Item 6a was not found similar with any of the items in Ahilik society.

ETHICAL NORMS		AHİLİĞİN ETİK NORMLARI	ETHICAL NORMS OF AHILIK
As Marketers, we must:			
<ol> <li>Do no harm. This means consciously avoiding harmful actions or omissions by embodying high ethical standards and adhering to all applicable laws and regulations in the choices we make.</li> <li>Foster trust in the marketing system. This means striving for good faith and fair dealing so as to contribute toward the efficacy of the exchange process as well as avoiding deception in product design, pricing, communication, and delivery of distribution.</li> </ol>		<ol> <li>Gözü haram olan şeylere,ağzı günah olan sözlere, eli zulümlere bağlanır.</li> <li>Ahi görenek ve otoriteye bağlı olmalıdır.</li> <li>Örf, adet ve törelere uymak.</li> <li>Kapısı konuklara, kesesi kardeşlerden ihtiyacı olanlara, sofrası ise bütün açlara açılır.</li> </ol>	<ol> <li>Ahi's eyes are closed to forbidden things, his mouth to sinful words, and his hands are tied to tyranny.</li> <li>Ahi should be loyal to customs and authority.</li> <li>To obey customs, habits and traditions.</li> <li>His door opens to guests, his wallet to the needy and his table to all hungry.</li> </ol>
ETHICAL VALUES	Means	AHİLİĞİN ETİK DEĞERLERİ	ETHICAL VALUES OF AHILIK
<b>1.</b> Honesty – to be forthright in dealings with customers and stakeholders. To this end, we will:	4,67	1.İçi, dışı, özü, sözü bir olmak.	1.Ahi's interior, exterior, essence and words should be same.
1.a.Strive to be truthful in all situations and at all times.	6,20	1.a.1. İşinde ve hayatında doğru, güvenilir olmak,	<b>1.a.1.</b> Strive to be truthful and trusty in his work and his life.
	4,40	1.a.2. Ahi doğru olmalı, emeğinin hakkı olandan fazlasını kazanma yoluna sapmamalıdır.	1.a.2. Ahi should be honest, and should not deviate to the way in which he earns more than he deserves.
	4,00	1.a.3. Bir başkasının malını taklit etme.	1.a.3. Do not imitate somebody else's merhandise.
1.b.Offer products of value that do what we claim in our communications.			
1.c.Stand behind our products if they fail to deliver their claimed benefits.			
1.d.Honor our explicit and implicit commitments and promises.	6,00	1.d.Ahdinde, sözünde ve sevgisinde vefalı olmak.	1.d. Strive to be loyal to his promises, his words and his love.

Table 1: A comparison of Ethical Principles of American Marketing Association and Turkish Ahilik Society (Continued)

2.Responsibility – to accept the consequences of			
our marketing decisions and strategies. To this			
end, we will:			
2.a.Strive to serve the needs of customers.			
2.b.Avoid using coercion with all stakeholders.			
2.c.Acknowledge the social obligations to		2.c.Emri altındakileri ve hizmetindekileri	2.c. Strive to protect and to look after his
stakeholders that come with increased marketing and economic power.	3,80	korumak ve gözetmek.	employees and people under his service.
2.d.Recognize our special commitments to		2.d.1.Yapılan iyilik ve hayırda hakkın	2 d 1 Should not observe anything other than
vulnerable market segments such as children,		hoşnutluğundan başka bir şey gözetmemek.	God's contentment in charity and kindness.
seniors, the economically impoverished, market	3,60		
illiterates and others who may be substantially		2.d.2.Herkese iyilik yapmak, iyiliklerini	2.d.2. Strive to help everybody and want their
disadvantaged.	4,00	1stemek.	well-being.
	3,60	2.d.3.Yapılan iyilik ve yardımı başa kakmamak.	2.d.3. Not to taunt kindness and assistance done.
		2.d.4.Ahilerden ihtiyaç sahibi olanlara ihsan	2.d.4. Strive to help and be generous to the needy
	5,20	ve keremde bulunmak.	among Ahis.
		2.d.5.Aza kanaat, çoğa şükrederek	2.d.5. Strive to be content with less and distribute
	4,20	dağıtmak.	plenty with gratitude.
	6,00	2.d.6.Cömert ve kerem sahibi olmak.	2.d.6. Strive to be genereous and kind.
2.e.Consider environmental stewardship in our			
decision-making.			

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<b>3.</b> Fairness – to balance justly the needs of the buyer with the interests of the seller. To this end, we will:			
3.a.Represent products in a clear way in selling, advertising and other forms of communication; this includes the avoidance of false, misleading	4,60	3.a.1.Hakka, hukuka uymak, hak ölçüsüne riayet etmek,	3.a.1. To obey law, justice and to observe the measure of law.
and deceptive promotion.	4,60	3.a.2. Hileli ve çürük mal satma.	3.a.2. Not to sell fake and spoilt goods.
	5,20	3.a.3.Noksan tartmayacaksın, bozuk terazi kullanmayacaksın.	3.a.3. Should not measure deficiently and use broken scale.
	5,20	3.a.4.Hakkı korumak, hakka riayetle haksızlığı önlemek,	<b>3.a.4.</b> Strive to protect justice and prevent injustice by being loyal to it.
3.b.Reject manipulations and sales tactics that harm customer trust. Refuse to engage in price fixing, predatory pricing, price gouging or "bait- and switch" tactice	6,00	3.b.1.Hakkı korumak, hakka riayetle haksızlığı önlemek,	3.b.1. Strive to protect justice and prevent injustice by being loyal to it.
	6,60	3.b.2.Ahilik, mal biriktirme ve yığma peşinde koşan haris istirmarcı ticarete kar <sup>o</sup> ıdır.	3.b.2. Ahilik is against goods accumulation and the ambitious and exploiter trade which attemps to heap up.
3.c.Avoid knowing participation in conflicts of interest. Seek to protect the private information of	6.40	<b>3.c.1.Ayıp ve kusurlarını örtmek,</b> gizlemek ve affetmek.	<b>3.c.1.</b> Strive to hide shame and faults and to forgive.
customers, employees and partners.	6,40	3.c.2.Sır tutmak, sırları açığa vurmamak,	3.c.2. Strive to keep secrets and not to reveal them.

Table 1. A comparison of Ethical Principles of American Marketing Association and Turkish Ahilik Society (Continued)

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4 Respect – to acknowledge the basic human		4 l Küçüklere seygili büyüklere karşı		
dignity of all stakeholders. To this end, we will:		edenli ve savgili olmak	4.1. Strive to love younger, to behave decently and	
uighty of an stakeholders. To this end, we will.	5,00	edepii ve suygin onnuk,	respectfully towards elders.	
		4.2.Kötü söz ve hareketlerden sakınmak,	4.2. Strive to sucid successing on diagonality	
	6,00		4.2. Surve to avoid swearings and insuits.	
		4.3.İnsanların işlerini içten, gönülden ve		
		güler yüzlü yapmak,	4.3. Strive to serve people sincerely and cheerfully.	
	5,50			
	6,25	4.4.Hiç kimseyi azarlamamak,	4.4.Strive not to scold anybody.	
	4,75	4.5.Kötülük ve kendini bilmezliğe iyilikle karşılık vermek,	4.5.Strive to respond evil with goodness.	
4.a.Value individual differences and avoid stereotyping customers or depicting demographic		4.a.Hizmette ve vermede avırım	4.a. Strive to avoid discrimination in serving and	
groups (e.g. gender, race, sexual orientation) in a		yapmamak.	donating.	
negative or dehumanizing way.	6,00			
4.b.Listen to the needs of customers and make all		4 b İnsanların işlerini icten gönülden ve		
reasonable efforts to monitor and improve their		güler vüzlü vapmak.	4.b.Strive to serve people sincerely and cheerfully.	
satisfaction on an ongoing basis.	6,20	8		
4.c.Make every effort to understand and		4 a Dast va arkadaslara tatlı gözlü samimi	4 a Strive to be absorful soft speken and sincere	
and distributors from all cultures		4.C.Dost ve alkadaşıala tatlı sozlu, sanının, güler yüzlü ve güvenilir olmak	and honest towards friends	
and distributors from an editures.	6.00	guier yuziu ve guvennin onnuk,	and nonest towards mends.	
4.d.Acknowledge the contributions of others, such as consultants, employees and coworkers, to marketing endeavors.	6,00	4.d.1.Ahiler yanlarında çalışan çırak ve kalfalara emekleri sömürülecek varlıklar gibi değil yetiştirilecek ve ileride işyeri temin edilecek birer insan olarak bakarlar.	4.d.1. Ahis treat apprentices and foremen not as assests whose labour should be exploited but see them as human beings who should be trained and set up a workshop in future.	
	6,20	4.d.2.Emri altındakileri ve hizmetindekileri korumak ve gözetmek,	4.d.2. Strive to protect and to look after his employees and people under his service.	
4.e.Treat everyone, including our competitors, as we would wish to be treated.	5,40	4.e.Daima iyi komşulukta bulunmak, komşunun eza ve cahilliğine sabretmek,	4.e. Strive to be a good neighbour and to have patience against neigbor's torment and illiteracy.	

Table 1. A comparison of Ethical Principles of American Marketing Association and Turkish Ahilik Society (Continued)

**Table 1:** A comparison of Ethical Principles of American Marketing Association and Turkish Ahilik Society (Continued)

5.Transparency – to create a spirit of openness in marketing operations. To this end, we will:			
5.a.Strive to communicate clearly with all constituencies.			
5.b.Accept constructive criticism from customers and other			
stakeholders.			
5.c.Explain and take appropriate action regarding significant	6,20	5.c.1.Hileli ve çürük mal satmayacaksın.	5.c.1. Not to sell fake and spoilt goods
product or service risks, component substitutions or other			
foreseeable eventualities that could affect customers or their	6.40		
perception of the purchase decision.	6,40	<b>5.c.2.Sahte ve kalitesiz mal</b>	5.c.2. Should not produce take and
5 d Displace list prices and terms of financing as well as		uretmeyeceksin.	poor-quanty goods.
S.d.Disclose list prices and terms of financing as well as			
6 Citizenship to fulfill the economic legal philanthronia	5.40	6 Abi kazangunun gegiminden arta	6 Abi should halp poor and upomployed
and sociatal responsibilities that serve stakeholders. To this	5,40	kalanının tümüyle yoksullara ye	be need to be a serving that remain
end, we will:		issizlere vardımda bulunmalıdır.	apart from his livelihood.
6.a. Strive to protect the ecological environment in the execution		3	
of marketing campaigns.			
6.b.Give back to the community through volunteerism and	4,60	6.b.1.Yapılan iyilik ve hayırda hakkın	6.b.1. Should not observe anything other
charitable donations. Contribute to the overall betterment of	,	hoşnutluğundan başka bir şey	than God's contentment in charity and
marketing and its reputation.		gözetmemek,	kindness.
	6,20	6.b.2.Cömert ve kerem sahibi olmak	6.b.2. Strive to be genereous and kind
	5,80	6.b.3.Ahi, kazancının geçiminden arta	6.b.3. Ahi should help poor and
		kalanının tümüyle yoksullara ve	unemployed people with the earnings
		işsizlere yardımda bulunmalıdır.	that remain apart from his livelihood.
	5,80	6.b.4.Ahilerden ihtiyaç sahibi olanlara	6.b.4. Strive to help and be generous to
		ihsan ve keremde bulunmak.	the needy among Ahis.
	5,20	6.b.5.Aza kanaat, çoğa şükrederek	6.b.5. Strive to be content with less and
		dağıtmak.	distribute plenty with gratitude.
6.c.Encourage supply chain members to ensure that trade is fair	4,80	6.c.Başkasının malına hıyanet etmemek	6.c. Should not betray the property of
for all participants, including producers in developing countries.			others.

Note 1: Mean values are calculated based on the following seven point scale: Completely the same in content 7; For the most part, similar in content 6; Similar in content 5; Undecided 4; Different in content 3; For the most part, different in content 2; Completely different in content 1.

#### **Discussion and Conclusion**

This research analyzed similarities and differences between the ethical norms and values of Turkish Ahilik Society and those of American Marketing Association. Research results show that ethical norms applied by these two perspectives are very similar to each other as these norms set what is right and what is wrong for the members. In general, both perspectives set norms about avoiding harmful actions, instilling trust in business and adhering to authority in business conduct. In terms of ethical values, there are some similarities and differences between the perspectives. Similar values include, being truthful all the time, commitment to promises, helping vulnerable market segments, avoidance of false promotion, wrong sales tactics, protecting private information, valuing individual differences, treating customers respectfully, acknowledging others' works, producing best quality products and giving back to the community.

Values that are stated in AMA principles but not found in Ahilik principles are related to issues such as practicing truthful marketing communications, meeting the needs of the consumers, avoiding using coersion with the stakeholders, showing concern for physical environment and disclosing list prices and terms of financing for customers. These issues may be considered as related to other ethical values of Ahilik society but they are not stated openly as done in AMA ethical principles. The differences found between the two perspectives may be related to time frame they are practiced as AMA guidelines represent values for the current century while Ahilik guidelines represent values of past centuries. Modern issues that affect population at large such mass communication, concern for environment, use of technology in business are considered part of business ethics by AMA and explicitly stated in the codes. Ahilik codes, on the other hand, are more related to business transactions at a personal level and directed toward self behavior.

This research attempted to bring two perspectives of ethics in business coming from different cultures and show similarities and differences between them. Future studies can exemplify how these principles were and are practiced in business environments to better explain the similarities and differences between these two approaches to business ethics.

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# A Research On Consumer Ethnocentrism and Consumer Boycotts

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**Abstract:** The objective of this study is to investigate the consumer ethnocentric tendency and consumer boycotts. Participiants who are consumers upper 18 age in 8 different cities of Turkey formed the sample for this study. For the emprical investigation consumer ethnocentric tendency and a new improved consumer boycott scales were used. Data collected were analyzed by using Anova, t-test and descriptive statistical techniques. Considerable findings in the matter of understanding consumer ethnocentric tendency and consumer boycot in Turkey market.End of this study it is found that significiant relationship between age and consumer ethnocentric tendency and significiant relationship between marriage status and consumer boycot tendency.

Keywords: Consumer ethnocentrism, Consumer boycott behaviour, CETSCALE

#### Introduction

The aim of this study is to examine the correlation between the ethnocentric tendencies of the consumers and consumer boycott behavior. Consumer ethnocentrism provides emotional perception of the consumers towards national goods. On the other hand, it is seen that even ethnocentric consumers prefer the cheaper goods even if they are foreign originated ones when they are comparing the goods in terms of prices which is a rational qualification.

Today, the increase of the competition, transformation of the world into a common market by transportation and information technologies, and the encountered economical difficulties have made the consumers more conscious and caring more about rational factors compared to old days. In fact, even consumer boycotts that are mostly done with emotional base don't last long because of the rational factors. Consumers end the boycott for the brand, good, or the country when they realize that they will get the maximum benefit from these goods. Although national goods which are bought as a substitution to the foreign ones, reach a high number of sales income during the boycott, they have dramatical decreases of sales income when the boycott ends. National manufacturers can have a constantly increasing sales income if they focus on the issues such as quality development and basing the market, rather than taking advantage of the cases like these.

#### **Consumer Ethnocentrism**

The concept of ethnocentrism means the tendency of the individuals to see their groups as the center of the universe and judging of the other groups that have cultural differences and blindly acceptance of the groups that are similar. In this context, the symbols and values of their own group are seen as a resource of pride while the values of the other groups are scorned. As a result of relating ethnocentrism with the consumer behaviors, the consumer ethnocentrism has appeared. In general concept, consumer ethnocentrism expresses the effects of consumers' national emotions on purchasing intentions. (Uzkurt & Özmen,2004).

Many scientific researches, mostly foreign, have been conducted about consumer ethnocentrism recently.

In the research which was conducted in 2004 in Eskişehir by Uzkurt and Özmen, data was obtained by interviewing the customers who were chosen using convenience sampling method. Analysis has been conducted over 172 surveys in total. As a result of the analysis, the old compared to the young, ones with a lower education level compared to the higher ones, ones who have lower income compared to the higher ones and married people compared to the bachelors have higher ethnocentric tendencies.

In the research which is conducted by Güneren and Öztüre (2005) in Cyprus using CETSCALE (Consumer Ethnocentric Tendencies Scale), data is obtained from the survey applied to 114 people who were chosen with convenience sampling method. As a result of the survey, the participants with a high level of ethnocentrism were

mostly amongst women, people with lower education level and lower income. No remarkable correlation has been seen with the age of the participants and ethnocentrism.

In the research which was conducted by Orth and Firbasova in 2002 in Brno, the second biggest city of the Czech Republic, and which was on ethnocentrism and yoghurts produced in Czech Republic, data was obtained using a survey applied to 297 people who were randomly chosen and four different correlation model were formed. As a result of the analysis it has been seen that, old consumers who have a high level of ethnocentric tendency, like Czech yoghurts more than the young costumers who have a lower level of ethnocentric tendency. It makes it hard to generalize the research that the number of the participants is low and it was only about yoghurt.

Fang Liu and others examined the correlation between the brand names from different languages and customers' ethnocentric tendencies in 2007 in Guangzhou, the capital city of Guandog state in China. As a result of the research it has been found that there is a remarkable correlation between the ethnocentric tendencies of the customers and their ages and education levels.

In the research that was conducted by Chakrabarty and Conrad in 1995, a survey was applied on the phone to 315 people who were chosen randomly. It has been found that ethnocentric tendencies decrease for good quality products.

#### **Consumer Boycotts**

The tendencies of consumers on not buying a brand or none of the brands of a country is called consumer boycott (Balıkçıoğlu and others, 2008). Consumer boycotts can be divided into various kinds considering the duration, scope, organization type and reasons to do.

However, it is very difficult to consider a boycott in one class. For example, a boycott that is started because of political reasons may last for a long time or in contrast it may last for a short time.

According to Balıkçıoğlu and others' statements, Friedman (1999) and Smith (2000) divide the consumer boycotts into four considering their functions. These are: instrumental, expressive, punitive and buycott.

When boycotts in Turkey are examined, it is seen that products of Denmark were boycotted as the last one. As a result of the publication of Hz. Mohammed's cartoons one after the other negatively, not only in Turkey but also in the whole Islamic World they had confronted with enormous reaction and a boycott towards Danish products was started. However, the very little trading volume between Turkey and Denmark was resulted this boycott not to be so effective. Besides this boycott which was done as a result of religious exploitation, Italy and France were boycotted because of political reasons and enterprises in the public towards boycotting the products of these countries were started. Just like it was in Denmark sample, the little trading volume between Turkey and these two countries and employment of thousands of Turkish citizens in Italian and French originated corporations in Turkey with their national partners resulted these two boycott enterprises to fail.

Besides country boycotts also brand boycotts have been made. Especially in 2005, an organized boycott on the Internet was started against Danone that is one of the biggest food companies, with messages distributed on the Internet telling that additional substances that cause mental deficiencies are used in the child-oriented products of this company and these statements caused dramatical decreases in the sales of the company.

Danone firm, that had great damage because of this case, has started legal process for the responsible ones who distributed these messages on the Internet and for the next marketing works focused on the message that its products include no additional substances that may damage human health transmitting it in various medias.

## **Research Method**

In the research data is obtained using a survey. Surveys were applied to consumers who live in eight different cities by interviewing them. 900 survey copies for consumers who live in 8 different cities were prepared and 514 of them returned, thus the analysis has been made using these 514 survey copies. The distribution of the participants according to the cities is given below.

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Province	Frequency	%
İstanbul	98	19.1
Ankara	99	19.3
İzmir	85	16.5
Adana	71	13.8
Afyonkarahisar	63	12.3
Konya	49	9.5
Samsun	20	3.9
Gaziantep	29	5.6

Table 1: The Distribution of the Participants According to the Cities

The survey used in the research has four parts. In the first part the participant's city, his/her attitude related to consumer behaviors and if he/she is a member of any kind of consumer organization or not are asked. In the second part basing on the February 2008 data of Turkish Statistical Institute (TSI) ten countries are given from which Turkey imported goods and the participants are asked to state their attitude towards these countries. In this part a fivefold likert scale has been used and attitudes are listed from (1) the country from which I can buy products with peace of mind, to (5) the country which must be boycotted the most.

In the third part, five scales, which are in "I certainly agree" and "I certainly disagree" interval, are given for 19 attitude items that are prepared in accordance with likert scale. Six of these items are taken from CESTSCALE which was developed by Shimp ve Sharma (1987). 10 items are related to consumer boycott and final 3 items are asked in order to find out the attitudes of the consumers towards foreign goods and EU.

In the fourth part the demographic features of the participants have been tried to evaluate. In addition, it has been asked the participants how do they defined themselves and whether they had any foreign product on at the moment when the survey was being applied.

## **Research Findings**

#### **Demographic Structure of the Participants**

64.6 % of the participants are male and 31.3 % of the participants a female. According to the 2008 TSI data male-female rationale is equal in total population but it has been a limit of the study that female rationale is less than male one. Besides according to the 2007 TSI data, the ratio of the university graduates to the total population is C (vocational schools+faculties+masters degree and Phd) about 10%. In the sample the rato of the university graduates is 39.7%. This situation is the other limit of the research.

Demographic Structure	Frequency	Current %
Gender		
Male	332	66,7
Female	161	32,3
Marital Status		
Married	292	58.9
Single	190	38.3
Widow-divorced	14	2.8
Education		
Primary education	79	15.7
High education	221	43.8
University	204	40.5
Age		
18-24	138	27.7
25-31	102	20.4
32-40	121	24.2
40-50	89	17.8
51-60	43	8.6
Over 60	6	1.2
Income (YTL)		
Below 580	107	24.2
581-800	84	19
801-1200	136	30.8
1201-2000	71	16.1
Over 2000 YTL	42	9.5
Occupation		
Officer	95	20.9
Laboring	120	26.4
Tradesman	72	15.8
Retired	33	7.3
Self-employed	33	7.3
Housewife	21	4.6
Student	81	17.8

**Table 2:** Demographic Structure of the Participants

## The World View of the Participants

At the end of the survey it has been asked the participants how they defined themselves and to choose one option out of six ones. 37% of the participants have defined themselves as patriots.

View	Frequency	%
Leftist	40	8.1
Social Democrat	92	18.7
Conservative	59	12
Religious	59	12
Nationalist	183	37.2
Liberal	36	7.3
None	23	4.6

**Table 3:** The World View of the Participants.

67% of the participants have stated that they had foreign products on at the moment of replying the survey. It has been found out that the most common foreign product that the participants have on is the mobile phone.

### **Research Findings About Consumer Boycott Behavior**

46.5 % of the participants have stated that they had boycotted a country or a brand.

In table 4 that is given below, the product groups that the consumers had boycotted are shown. As a result of the analysis it has seen that the product group which is boycotted the most is food group with a ratio of 44.7 % and the least is medical group with a ratio of 2.5%.

Product Group	Frequency	Current %
Food	106	44.7
Confection-textile	36	15.2
Automative	21	8.9
Personal care products	16	6.8
Cleaning products	11	4.6
Whiteware	13	5.5
Newspaper-magazine	11	4.6
Furniture-carpet-home products	9	3.8
Banking-insurance group	8	3.4
Medical Group	6	2.5

 Table 4: Boycotted Product Groups.

When the boycott durations are analyzed, 61.3 of the participants have stated that they have been still going on with the consumer boycotts.

Boycott duration	Frequency	Current %
Below 3 mounths	25	10.6
3-6 mounths	25	10.6
6-12 mounths	19	8.1
1-2 years	14	6
Over 2 years	8	3.4
Still going on	144	61.3

 Table 5: Boycott Duration

## **Boycotted Countries and Brands**

With a ratio of 35.7% it has been found out that mostly boycotted country is USA and 39% of the participants believe USA to be boycotted constantly. Five of the participants have stated that they boycott Turkey.

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Country	Frequency	Current %
U.S.A	74	35.7
France	38	18.4
Israel	28	13.5
Italy	16	7.7
China	13	6.3
Russia	1	0.5
England	4	1.9
Denmark	16	7.7
Netherland	12	1
Germany	6	2.9
Iran	1	0.5
Turkey	5	2.4
Sweden	1	0.5
Japan	2	1

Table 6: The Boycotted Countries

It has been found out that the participants boycott 41 different brands. According to the results of the analysis mostly boycotted brand is Coca-Cola. As Coca-Cola is a food company that belongs to the USA, it is seen that research findings about the boycotted product group, country and brand are consistent. It has been found out that 11 different Turkish brands are boycotted by the participants.

Brand	Frequency	Current %
Coca-Cola	49	36.6
Ariel	10	7.5
Danone	5	3.7
Mc Donalds	3	2.2
Nestle	7	5.2
Nescafe	2	1.5
Rodi	1	0.7
Motorola	5	3.7
Gucci	1	0.7
İpek shampoo	1	0.7
Colgate	1	0.7
Bosche	1	0.7
Benetton	3	2.2
Newspaper of Turkey	1	0.7
Ülker	1	0.7
Rosche	5	3.7
Profilo	1	0.7
Adidas	1	0.7
Pınarsüt	1	0.7
Fruko	1	0.7
Leke	2	1.5
Knorr	1	0.7
Converse	1	0.7
Amway	2	1.5
Telefunken	3	2.2
Vestel	1	0.7
İstikbal	1	0.7
Avon	2	1.5
Beta	3	2.2
Leman	1	0.7
Newsweek	1	0.7
Peugeot	1	0.7
Renault	4	3
Ford	1	0.7
Fiat	1	0.7
Scharzkopf	2	1.5
Siemens	1	0.7
İpana	2	1.5
Philips	1	0.7
Toyota	1	0.7
Loreal Paris	1	0.7

Table 7. The Boycotted Brands

34.3 % of the participants have stated that they bought a product again later which once they had boycotted. 16.1 % of the participants have replied the question. The reasons of the re-purchasing these products are shown in Table 8.

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Reasons for Repurchasing	Frequency	Current %	
Quality	18	21.7	
Chepness	12	14.5	
Obligation	43	51.8	
Reason of the boycott was disappeared	10	12	

 Table 8: Consumers Reasons for Repurchasing The Brands That They Boycotted.

More than half of the participants who have replied to the question have stated that they re-purchased the products that they once boycotted because they had to do it. 21.7 of the participants have re-purchased the products because of its good quality.

The attitudes of the participants towards ten countries from which Turkey had imported goods according to the February 2008 data of TSI have been evaluated. A fivefold scale has been used starting from the country from which you can buy goods in peace of mind (1) to the country that must be boycotted the most (5) In table 9 attitudes of the participants towards these ten countries are shown.

Countries	The counrty	The counrty	The country	The country	The country	The
	which shoul	which should	which	which should	which we get	participants
	be boycotted	be boycotted	doesn't need	be	their	that have no
	most (%)	(%)	to be	cooperated	products with	informed
			boycotted	(%)	peace of	(%)
			(%)		mind (%)	
Russia	9.7	17,3	27	27	3.5	15.4
Germany	8	13.6	28	23.2	13.6	13.6
China	35.6	24.7	15.6	10.9	1.8	11.5
Italy	10.9	22	27.4	14.2	3.5	22
U.S.A.	55.6	24.5	7	4.5	1.9	6.4
France	42.8	26.1	11.9	6.4	1.6	11.3
England	28.8	19.8	19.5	12.5	2.7	16.7
Switzerland	12.5	11.5	30.5	17.5	7.2	20.6
Ukrain	5.4	8.4	35	22.8	5.8	22.6
Iran	10.5	5.1	29.4	30.5	8.6	16

Table 9: View of the Participants About Ten Selected Countries

Only 1.8 % of the participants have been a member of any kind of a consumer organization.

Evaluation results about the 19 items which are located in the third part of the research and which are prepared using a fivefold likert scale about the attitudes of the participants towards consumer boycotts are given in Table 10.

Statement	Mean	S.D.
1. Domestic products should be taken at any time instead of	4.18	1.03
imported products.		
2. The products not only in our country should be imported.	3.94	1.03
3. Foreign products should'nt be bought because this will cause	3.64	1.14
unemployment.		
4. I prefer to support my country's product, even if the cost	3.72	1.15
burden to me.		
5. Access of the foreign products to Turkish market should be	3.71	1.07
complicated	2.72	0.02
6. Consumer boycotts are effective on companies.	3.73	0.92
7. Local businesses organizate the boycotts that against to the	3.26	0.92
foreign products.	4.01	0.07
8. Media orientate the consumer boycotts.	4.01	0.87
9. I boycott the products of companies which exploited my		
religious beliefs.	4.10	0.00
	4.19	0.99
10. I boycott the products of companies which damaged my	4.33	0.89
country's political interest.	0.05	1.15
11. People around me effect met to do consumer boycott.	2.35	1.15
12. I boycott the products with my own volition.	4.04	1.61
13. I never purchase a product of a country or firm which I		
boycotted before.	3.85	1.02
14. I try to orientate the other consumers to boycott.	3.57	1.1
15. Boycott is an individual reaction against the negative	3.96	0.94
bahaviour.		
16. Importation sholud be prevented because it is a big threat	3.97	1.02
for domestic production.		
17. Quality product should been in my country even if it is	3.49	1.12
foreigner		
18. I believe that EU membership would be useful for our	3.35	1.34
country.		
19. Imported products increases our quality of life.	2.82	1.24

 Table 10: Average Values Related to the Participants' Ethnocentric Tendencies and Consumer Boycott Behaviors

The correlation between the demographic characteristics of the participants and consumer ethnocentric and consumer boycott behaviors has been examined. T-test and variance analysis results are separately given in Table 11 and Table 12.

Demographic Structure	Calculated Value	Significicance Level	(P=0,05)
Gender	14.684	0.188 (t)	
Age	2.297	0.048	
Marital status	0.601	0.549	
Income	2.548	0.02	

 Table 11: The Examination of the Correlation Between Ethnocentric Tendencies and Demographic Features of the Participants

As a result of the T-test it has seen that ethnocentric tendencies don't change according to the gender. As a result of the variance analysis no remarkable correlation is found between the consumer ethnocentric tendencies and marital status. Besides that it is seen that consumer ethnocentric tendencies differ according to age and marital status.

Demographic	Calculated Value	Significicance	(P=0,05)
Structure		Level	
Gender	1.073	0.451	
Age	0.843	0.519	
Marital status	3.076	0.047	
Income	0.676	0.669	

Table 12: The Examination of the Correlation Between Consumer Boycott Behavior of the Participants and Thei	r
Demographic Features.	

In the result of the T-test it has been found out that consumer boycott behaviors tendencies don't differ according to the gender. In the results of variance analysis it has been found out that consumer boycott behavior tendencies differ according to the marital status. In addition to that it has been found out that consumer boycott behavior behavior tendencies don't differ according to the age and income.

### **Conclusion and the Limits of the Research**

Inadequate quantity of the sample group and because available sample group doesn't reflect the demographic features of the main group prevent the research results from generalization. Another limit of the research is because of the disparity of the number of the participants from 8 different cities compared to the number of each city's population.

As a result of the T-test it has been found out that consumer ethnocentric tendencies don't differ according to the gender. As a result of the variance analysis no remarkable correlation has been found out between consumer ethnocentric tendencies and consumer marital status. However, it has been found out that consumer ethnocentric tendencies change according to the age and income.

As a result of the research, the upper location of the countries and brands that are mostly boycotted in the list in terms of Turkey's exporting volume and intensifying of consumer boycotts in especially some definite countries and brands can be subjects of future researches.

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# Data Warehousing (DW) - Models and Business Application

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**Abstract:** Fighting with competition requires innovative ways of achieving the advantages in the market. Creating long-term policy of doing business with the possibility of adjustment to unpredictable phenomena requires an enormous amount of quality information about the condition of the company, market, trends of state policies, international trends, etc. This is a huge amount of different data. In the DW this information is extracted, transformed, at the same time detailed and aggregated, processed in a format that suits the user and is available in real time.

The Data Warehouse is a unique picture of business reality and ensures the comprehensiveness of the whole business system; coverage of external and internal data is the basis for defining the business strategy. The DW promotes the business of the company by enriching the business processes and their participants with information needed for making business decisions. It is forced to accurately define and describe the business processes that need to be rejected, imported or innovated. The DW contains rapid, accurate, aggregated, visually accessible information that contains a time dimension, which represents an important managerial resource.

# Introduction

In the market there is growing competition that day by day globalizes. At the same time, buyers are more and more selective. All this is forcing manufacturers to constantly check their competitiveness in the market and to find a successful business strategy. Strategic advantage over competitors is sought by achieving the proper planning of market, product innovation, and proper relationships with customers and clients. It is necessity to have timely and relevant information on all aspects of the business and market situations.

Data Warehousing is an important concept of effective decision support systems that are intensively developing in recent years. With this concept and the methods is wanted to achieve "intelligent" business of company in complex market conditions. For this already there is the name "business intelligence".

The company, which analyzes the behavior of their customers, behaves "intelligently". For example, it has all the necessary customer data and captures every activity which is connected to that customer in the database. With the analysis of this data, for example; by analyzing what and when the customer purchased, how many complaints and for which products he had, all these analysis make the customer profile, or can be put into some category. With the analyses of their own business data and external factors, we get the information used in making optimal business decisions, and at the end make profit and ensure the further existence.

## **Data Warehousing**

Data Warehousing is a set of data organization on which a decision support system is based. A small data warehouse that contains the data of only one area is called a regional data warehouse (eng. Data March). Data Warehouse is defined as a set of information organized so can be analyzed, extracted, merged and otherwise be used to understand their essence.

Data Warehousing is also a database, provided that the information in it is organized in a special way. A Data Warehouse has a large amount of data that is organized into small logical units called March Data. Data Warehouse systems use abnormal (relaxed) data. Executing a query over the data organized this way is much faster. This kind of work is called OLAP (On Line Analytical Processing). Data that is embedded in the data warehouse is usually accessed through the March data. March Data usually represent a subset of logically related data from the data warehouse, which refers to a specific area.

Business Intelligence is taken from data generated during the everyday business of firms. Because of the perimeter, this data is archived each year, deleted and only the data of the next year remains in the database. In addition, the data in the database must be updated so that old data is replaced with new data (e.g., old price, the old quantity in warehouses or in stores they are being replaced by new ones), and then the trail of the old data is erased in the database. For operational management of the old values businesses, for example, quantity in warehouse are not important, but they are important for the business intelligence that tracks the time sequence of events of individual business events. As a conclusion we can say that transactional bases are no longer enough, there is a need for data warehouse.

Table 1. view of database and data warehouse

# Features of Database

The data in related databases is organized into twodimensional tables that are mutually connected. The database contains information for each business period. After this period the data is archived and deleted from the current database. The data is constantly being updated and the old values cannot be seen.

# What is differet beteen a warehouse and a database?

A warehouse does not accumulate all the data from the database in recent years. Only the data from the database that is thought to be important for the analysis is archived



in the warehouse. The data in the warehouse is organized in a multidimensional cube, it is permanent and is related to the time of emergence. The aim of the data warehouse is not operational business, it is to create a richer sourse of information for various short and long term analysis and for forecasting.



The properities of the Data Warehouse are integration of Data Warehouse systems, the orientation of the Data Warehouse system threads, the time dependence of the Data Warehouse system and the permanence of the Data Warehouse system.

## Orientation of DW System on Topics

The data is categorized and organized according to topics of business and not as a functional unit. Examples of possible themes are Sales-information about products, customers, spatial and organizational structure; Marketing-data about markets, products, customers, technologies, plans; Production-data about products, customers, technologies, plans; Financial operations; and Transportation.

# Time Dependence of DW System

The data is organized by a series "cross of state" of operational data; each cross refers to a time interval. *How appear Data Warehouse ?* 



# **Basic Models of Data Warehouse**

When creating a data warehouse today in practice we face three basic models or basic architecture of data warehouse:

(1) two-layer architecture with a common data warehouse (original data + data warehouse); this model is characterizing a single common centralized data warehouse. Data are received from various sources inside of the organization and external data sources available via the Internet or other means. Characteristic of two-layer architecture is that it serves a large number of organizational units of company as individual users. Such warehouses are large scale and very complex, and they are usually stored vast amounts of data. And the scheme of data that are used for storing data should support a wide range application request. From the above it is evident that the costs of maintaining such architecture are high and assume a substantial commitment and time of a certain number and profiles of experts.

(2) two-layer architecture with multiple independent local data warehouse (original data + data march); Characteristics of this data warehouse architecture is the existence of large number of independent local data warehouse intended for support individual applications in the organizational units of companies. The result of this architecture is the large number of systems which each of them submitted their data from various transactional databases. The advantage of the above model of data warehouse is simpler construction and easier to use. But this model also has disadvantages such as: (1) Difficulties in communication among organizational units of companies. This model is not suitable for companies whose business requires the support of applications and projects that assume mutual communication and cooperation of a larger number of organizational units of companies. (2) Increasing the number of mutually independent data warehouse, slow growth and load themselves transactional systems. (3) Data Marches are designed to support only one application and subsequent addition of new applications in a specific warehouse represent difficulties. (4) Limited scalability of platform. And, (5) Uvid into actual state of information at the company level became difficult.

# (3) three-layer architecture with a common data warehouse and several affiliated local warehouses (original data + data warehouse + data march);

This model consists of large number of local data warehouse and a common data warehouse that is located between the data warehouse and various data sources within and outside the company. Data warehouses rely on central data warehouse that delivers information in a form that provides uniform access to all segments of company business. Compared to the previous two models the advantages of three-layer architecture are higher accuracy of the information freely from which sources are affected, communication among organizational units is easier, the burden on IT specialists is reduced, stability and scalability of data warehousing platform is increased, and at the end, this architecture is offering possibility of using foreign applications allowing connection of all entities in the chain of value.

This three-layer warehouse architecture, that is known as the most used one has it owns advantages and disadvantages. The advantages are: (1) The work load of IT specialists is reduced (because the data is already coordinated in the warehouse, so they are just taken in the warehouse); (2) More opportunities to add new application; (3) Improves the accuracy and precision of information (because everything is derived from one warehouse); (4) Less difficulty in communication and cooperation between organizational units and parts that has to

be performed together; and (5) The possibility of the use of applications that goes beyond the framework of operations (connecting with buyers and suppliers in the value chain). The disadvantages are: Relatively high cost of establishing a common warehouse at corporate level (to eliminate this disadvantage we have to make a gradual incremental construction of warehouses: first we have to create the first warehouse, then the mini-warehouse, than gradually add new warehouses and activate new applications, and finally comes the independence of the "real" warehouse).

# **Implementation of Data Warehouse**

There are many ways to implement the Data Warehouse in a company. The implementation can be seen from several aspects:

(1) An area that covers the data warehouse; DW can contain all the information of one company and for a period of several years. Also, DW can carry a personal character for a specific manager and can contain information from a short period of time (one year).

(2) Volume of data redundancy; there are three levels of data redundancy that companies should consider when designing their own DW. (1) Virtual or "Point to Point" DW; (2) Central DW; and (3) Distributed DW.

(3) Types of final users; when we look at the DW from the final user point, we can establish three categories of users: (1) CEOs and managers; (2) "Powerful" users (business and financial analysts, engineers, etc.); and (3) Users for support (operational and administrative staff)

# Levels of Analysis of Data in Warehouse

*1. Generate static reports* - If we only need a report in tabular or graphical format on the existing data from the data warehouse, report generators are sufficient tools (e.g. Microsoft Crystal Reports or Oracle Reports), which simply display data that is filtered, sorted or summarized by some criteria from the database.

2. OLAP (on-line processing analytical) - More complex, analytical processing of data by different dimensions is done at the relational base on OLAP technology (e.g.: if you want to get information about Mazda 323 cars for sale in Osijek Friday afternoon). To view OLAP we have to use the most frequent three-dimensional cubes.

3. Data Mining - The most complex part of data processing, means sophisticated Métis for searching hidden laws in data.

# **Selection of DW Strategies**

Before the DW system is developed, it is necessary to choose a strategy that is as far as possible a guarantee that the ultimate solution will meet the specific demands at the time.

Who are the final users? Which areas should be covered? What kind of information should the DW provide? These are just some of the issues raised in the selection of implementation strategies of a DW in a company. We should not ignore the fact that man is the main factor in the decision making process.

# **Business Application of Data Warehouse**

Databases can be seen as the area where the company partners (customers, clients, service users) leave clues about their business relationship with the company. Every transaction, purchase, invitation addressed over the call center, seeking bids for certain set of items is being recorded in database.

Company that are using Data Warehouses

1) Volkswagen AG - uses Business Object tools for monitoring all data - from finance, manufacturing, development, research, sales, marketing and purchasing. Users at all levels can access the statements in BI tools.

2) MasterCard International – uses the BI tools for monitoring data in the area of advertising and authorization and fraud detection.

3) Magma uses OLAP and BI tools to improve the reporting system on the sale of goods.

# **Example of Applying DW in Textile Trades**

A typical retail shop sells textiles to a large number of customers whose needs are significantly different. Without adequate resources for the analysis of numerous data about clients, the shop would be doomed to failure. The biggest benefits for a business are functions, the contact point through which insight into the characteristics and behavior of clients is created.

The development of information technology has enabled us to be informed about clients and also to fill our database with useful information.

The value of a customer is very important data. During their entire life cycle, the value of the customers is always changing. All clients are not equally profitable, so the profitability of customers also changes over time. These are the reasons why it is important to identify the clients whose value during their entire life cycle is great and to establish close relationships with them. Our database should also contain answers to important questions about customers, such as customer loyalty, cross selling, determining target prices, but also about suppliers, the efficiency of suppliers, stock control, product flow, forecasting demand. The emphasis on the importance of logistics leads to specialization in providing logistics services exclusively.

Textile makers are faced with the traditional approach of material offers which a user can feel and with the new generation of customers that manage in the virtual world almost as much as in the real.

A well-made database enables the rapid development and progress in every sense. Also, the path from the manufacturer to the final consumers is reduced to the minimum.

However, the possibilities of keeping the customer in this market are far greater than in others. Today we are witnessing estimates that the market of direct selling as it was known in years past will completely disappear, work on the DW and the content that is offered to customers with quality procurement and distribution channels can ensure the stability of textile makers in new times. Therefore we should not neglect the potential of the Internet, but we should consider target regional environment.

Decisions taken should be closely connected with the database. The database should be well designed, created and filled with good information. That is the only way to guarantee life and successful business.

## Conclusion

Fighting competition requires innovative ways of achieving the advantage in the market. Creating a longterm policy of doing business with the possibility of adjustment to unpredictable phenomena requires an enormous amount of quality information on the condition of the company, market, trends of state policies, international trends, etc. This is a huge amount of different data. In a DW this information is extracted, transformed, at the same time detailed and aggregated, processed in format that suits the user and available in real time.

The Data Warehouse is a unique picture of business reality and ensures the comprehensiveness of the whole business system; coverage of external and internal data is the basis for defining the business strategy. The DW promotes the business of the company by enriching the business processes and their participants with information needed for making business decisions. It is forced to accurately define and describe the business processes that need to be rejected, imported or innovated. The DW contains rapid, accurate, aggregated, visually accessible information that contains a time dimension, which represents an important managerial resource.

The DW is an information technology that simply imposes cooperative team work of professional information experts and economists, and links the technical and business worlds. Perhaps this will lead to better cooperation between designers and users of information systems and thus to greater success in the project of building company information systems.

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# Public Expenditure and Political Business Cycles inTurkey

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**Abstract:** According to the theory of "Political Business Cycles (PBC)", politicians prefer to pursue opportunistic policies in order to increase their chance of election. For this reason, they apply expansionary policies before the elections. Hence, they start to do this by increasing public expenditures. There is an increase in the indicators of money parallel to the increase in public expenditures. In this study it is examined that whether there have been appropriate developments in terms of PBC theory during the elections of six congressmen in the period after 1980. In order to determine the effect of PBC "the traditional opportunistic model" from Nordhaus is used to test the PBC effect. "The opportunistic model" from Nordhaus is tested through the autoregressive analysis method which is used by Alesina, Cohen and Roubini (1991,1992) in their studies for the OECD countries and industrial countries. The results obtained as a result of the empirical analysis support the PBC theory.

## Introduction

The history of economics is the history of debates between the ones who claim that the government intervention is necessary and who claim that it is unnecessary. In the framework of these debates, applications of both of these approaches are observed due to the economic conditions of each period. However, there is a fact which should be accepted that every day the state intervenes in the economic life with different reasons and through various legal and institutional regulations. If the economists are not able to put their developed theories into the application, then they just do brain gymnastic. Thus, this situation is seemed during many years and this distinction between economics and politics give the idea to the politicians that they can arrange the economic life according to their own vote calculations. This idea becomes widespread along with the economists isolate themselves from the legal and institutional structure of the society (Savaş, 1997). Especially in the developing countries with a less institutional and legal structure, the public share in the economy is more than others. Through the political instabilities it is understood that the financial issues are not the only reason of this situation. In the beginning the state is seem as maintaining the social order and it is associated with the Leviathan which is a superhuman being, whereas later it is seen that the state is transformed to a monster that gives harm to its environment. Especially, after the Second World War the rapid increase in the contribution of state in the economic life is defined as a very big danger (Erim, 2007). If being away from the economic life is impossible for the state, at least there should be a limit of this contribution. Politics and political institutions should be accepted as endogenous rather than exogenous in the economic theories. After the long historical development process from this view, the Political Economic Theory (PET) is developed.

According to the PBC theory economy is manipulated by policy makers during the electoral periods since politicians behave with political interest mostly in these periods. If the politicians are not restricted enough with the laws in terms of their usage of economic policy tools, they prefer to pursue opportunistic policies instead of policies for the interest of the public. In order to affect electorates, they mostly increase public expenditures. The financing of the increased public expenditures is funded through increasing the money supply instead of increasing taxes since taxes are not pleased by the electorates (Azgün, 2006). In this study, it is examined that whether the PBC has an effect on the money variables of public expenditures, money supply and money in circulation during the general elections of six congressmen in the period after 1980 in Turkey. "The traditional opportunistic model" of Nordhaus is used in order to test the effect of PBC. "The opportunistic model" from Nordhaus is tested through the

autoregressive analysis method which is used by Alesina, Cohen and Roubini (1991, 1992) in their studies for the OECD countries and industrial countries.

# **Political Business Cycles Models**

The concept of Political Business Cycles is firstly used by Nordhaus. According to Nordhaus, by aiming vote maximization politicians pursue expansionary policies before the elections in order to boost the economy whereas they pursue contractionary policies after the elections in order to remove the effects of these expansionary policies. Therefore, a cycle occurs in economy due to the electoral periods (Nordhaus, 1975).

When the studies related with Political Business Cycles is examined it is observed that the literature regarding to this issue is developed on two cycles. The first one is "traditional model" that is considered in two categories and the first of these is the opportunistic model developed by Nordhaus and the second one is the partisanship model developed later by Hibbs (Hibbs, 1977). According to opportunistic model, politicians do not have partisan objectives, they just appeal all kinds of manipulations in order to win elections. According to partisanship model, politicians try to gain votes of their own electoral group by implementing ideological policies. Secondly, in the framework of "rational expectations theory" which is popular in 1980s, the PBC theory has been developed as a "modern approach". With the acceptance of rational expectations theory, the PBC theory is criticized at the beginning. However, as a result of the empirical studies positive findings are obtained regarding to that the PBC theory can still be explanatory even though the rational expectations theory is valid. According to the modern PBC theory, because of the asymmetric information between the governments and citizens governments continue to exhibit opportunistic or partisanship behaviors.

# Methodology

In this study, in order to determine whether the politicians pursue opportunistic policies or not in the electoral periods, the autoregressive analysis method is used which is applied by Alesina, Cohen and Roubini (1991,1992) in their studies for the OECD countries and industrial countries (Alesina, 1991). The autoregressive models are preferred instead of the structural models regarding each macroeconomic indicator which is due to the reason that by testing each variable with the same model it is aimed to decrease the probability of difference that can be arisen from modeling error in the determination of the effect of electoral periods. Furthermore, in the literature it is emphasized that structural models are mainly valid in the developed countries with strong economy whereas their validity is questionable in the less developed and developing countries with fragile economic system (Özkan, 2005).

General notation of the autoregressive model which is used in this study is as in the following:

 $Y_{t} = \alpha_{0} + \alpha_{1} Y_{t-1} + \alpha_{2} Y_{t-2} + \dots + \alpha_{n} Y_{t-n} + PBCDUMMY + \varepsilon_{t}$ 

Here, Yt represents each macroeconomic indicator. PBCDUMMY is the dummy variable that indicates the dynamic implications of the theory of political business cycles. PBCDUMMY is defined as "1" for the election quarter and three quarters before the election, and defined as "0" for other periods. et represents the error terms.

(1)

The lagged values of autoregressive model is determined through the "from general to special theory". The stability of series is examined through the ADF unit root test (Dickey and Fuller, 1990). The Jarque-Bera(JB) test is used in order to test whether the normality assumption, which is one of the necessary assumptions to perform autoregression analysis, is satisfied or not (Bera and Jarque, 1981). After these models are tested, through the Breusch Godfrey (LM) test it is checked whether there is an autocorrelation between the error terms or not (Godfrey, 1988). For error terms having constant variance is another necessary condition for autoregression analysis. The ARCH LM test is used in order to determine whether the error terms have constant variance or not.

## Test Results Unit Root Analyses Result

When the graphic of public expenditures series in real terms is examined, seasonal effects are observed in the series. It is observed that the coefficients are significant in the regression analysis which is performed with the seasonal dummy variables. The seasonality effects are removed from the series and the stability of the series is checked with the ADF test. As seen on Table 1, the real public expenditures series which does not include seasonal effects is not stable as its degree. It is seen that the yearly percentage change of series is stable with 0.05% significance level according to the ADF model which has a constant term and trend.



Figure 1: Degree of Public Expenditures and Its Yearly Percentage Change Graphics

When the graphic of public expenditures series in real terms is examined, seasonal effects are observed in the series. It is observed that the coefficients are significant in the regression analysis which is performed with the seasonal dummy variables. The seasonality effects are removed from the series and the stability of the series is checked with the ADF test. As seen on Table 1, the real public expenditures series which does not include seasonal effects is not stable as its degree. It is seen that the yearly percentage change of series is stable with 0.05% significance level according to the ADF model which has a constant term and trend.



Figure 2: Degree of Real M1 and Its Yearly Percentage Change Graphics

When the graphic of Real M1 series is examined, at first it is observed that the series is not stable. Furthermore, it appears that there can also be seasonal effect. It is seen that the coefficients are significant as a result of the regression analysis done with the seasonal dummy variables. However, when the yearly percentage change is considered the seasonality effect disappears. Furthermore, when Table 1 is examined it is seen that while the real M1 series is not stable, the percentage change is stable in all ADF models in terms of various significance levels.



Figure 3: Degree of Real Money in Circulation and Its Yearly Percentage Change Graphics

When the graphic of real money in circulation is examined, it is understood that the series is not stable, however it is not certainly understood whether there is a seasonal effect or not. As a result of the regression analysis done with the seasonal dummy variables it is seen that the coefficients are insignificant, therefore it is understood that there is no seasonality effect. When the results of the unit root test is examined, it is observed that the series of real money in circulation is not stable in degree of level whereas the percentage change is stable in all ADF models in terms of various significance levels.

The results of ADF unit root test, which is performed to determine the stability structures of series, are shown on Table 1.

	with constant		constant term			without constant		
	term	Lag.	and trend		Lag.	term and trend	Lag.	
Public expenditures	-2,04	3	-1,47		3	-0,91	4	
Public expenditures %	-1,80	8	-3,79**		3	-0,76	4	
M1	0,03	4	-1,00		4	0,98	4	
M1%	-2,70***	4	-4,08*		7	-2,02**	8	
Money in circulation	1,62	6	0,37		6	2,12	6	
Money in circulation %	-2,85***	4	-4,90*		3	-2,44**	4	
	%1 -3,51		-4,06			-2,59		
Kritical values,	%5 -2,89		-3,46			-1,94		
	%10 -2,58		-3,15			-1,61		

Table 1: ADF Test Results

#### **Autoregressive Model Analyses Results**

The summary of statistical values for autoregressive model examining public expenditures, money supply and money in circulation is shown on Table 2. The autoregressive models which are estimated by lagged values are as in the following:

Pub.Expen. = 2,53+13,6 Pub.Expen. (-2) + 0,18 Pub.Expen. (-4) + 0,39 PBC(0,00) (0,03)(0,08)(0,00)

M.Cir. = 2,95+0,49 M.Cir.(-1) + 0,20 M.Cir.(-2) - 0,33 M.Cir.(-4) + 26 M.Cir.(-5) + 11,79 PBCdummy (0,41) (0,00) (0,07) (0,00) (0,01) (0,00)

	Dependent Variable								
Independent	Public			Money Supply			Money Circulation		
Varieble	$\alpha_i$	t ist.	t pro	$\alpha_i$	t ist.	t ol.	$\alpha_i$	t ist.	t prob
PBC	13,6	2,17	0,03	8,22	1,87	0,06	$11,79^{*}$	3,07	0,00
$\mathbf{R}^2$	0,25			0,62			0,44		
DW	2,07			2,07			2,05		
F probably	0,00			0,00			0,00		
JB	47,47	(0.00)		1,40 (0,4	49)		17,10 (0	,00)	
LM	0,85 (	0,47)		0,53(0,5	8)		0,56(0,5	6)	
ARCH	0,92 (	0,40)		0,30(0,7	(3)		1,27(0,2	7)	

 Table 2: Autoregressive Analyses Results

According to the regression estimate results on Table 2, it is observed that there is no autocorrelation and changing variance problems in the LM and ARCH tests. Even the normality assumption is not satisfied in the model regarding money supply since the number of observation (80) is sufficient enough and since there is no changing variance problem the regression is highly confidential.

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When coefficient estimate results regarding to the examined variables are concerned, it is seen that PBCDummy coefficient is positive and significant as appropriate to the theory. This acquired result confirms the argument of the PBC theory that when the politicians try to affect the electorates they mostly use the "public expenditures" as fiscal policy tool. As a result of the increase in public expenditures there is an increase in money supply and money in circulation.

## Conclusion

Manipulating the macroeconomic policies in the direction of politic interests is one of the significant problems of Turkish economy as in the economies of many countries. In order to come to power and to establish government, politicians do not avoid using macroeconomic policies as instruments. In this study it is aimed to determine whether politicians have opportunistic behavior or not. Therefore, it is analyzed that being appropriate to the PBC theory whether there is a significant change in policy instrument variables such as public expenditures, money supply and money in circulation during the electoral periods. When the obtained results are examined it is observed that the election dummy variable regarding public expenditures, money supply and money in circulation is positive and statistically significant which is appropriate to the theory. These findings assert that governments pursue opportunistic policies in electoral periods in Turkey.

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# **Comparison of Islamic, Traditional and Alternative Utility Theories**

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**Abstract:** Decision making under uncertainty is always trying to be explained by utility theory. And utility theory's roots rely on moral philosophy. Moral philosophy is concerning concepts about good and bad, right and wrong, virtue, justice, etc. It can be say that utilitarianism, which is a field of moral philosophy, is more directly about utility theory. Throughout the human history, from Prophet Abraham to Greek philosophers; Socrates, Aristotle, Epicurus, to Islam scholars al Kindi, al-Farabi, al-Razi, Ibn-i Sina, Ibn-i Rushd, Ibn-i Haldun, all discussed about ethics and utility concept.

# 1. Introduction

Although utility is an economic term which measures the satisfaction or desirability in terms of the consumption of goods and services, its roots rely on moral philosophy which deals with the concepts about good and bad, right and wrong, virtue, justice, and happiness. On the other hand, concepts of good and bad, right and wrong, virtue, justice, and happiness was constituents of ethichs throughout history of humanity.

Human concepts like good and bad, right and wrong, virtue, justice, and happiness were the concern of human civilizations through millenniums. Historically the foundations of human ethics are laid by divine revaliations through prophets.

Muslims identify the prophets of Islam as those humans chosen by Allah to teach mankind. Humans may rely on revelation or tradition to identify prophets. Each prophet brought the same basic ideas of ethics. They brought the belief in a single God and in the avoidance of idolatry and sin.

Muslims regard Adam as the first prophet and Muhammad as the last. Islamic theology recognises as many as 124,000 prophets. The Qur'an identifies 25 prophets by name, starting with Adam and ending with Muhammad. Five of them, Rasuls, receive the highest reverence for their perseverance, Ibrahim (Abraham), Moosa (Moses), Dawud (David), Isa (Jesus), and Muhammad.

## **1.1 Prophet Ibrahim (Abraham)**

Ibrahim was born in a house of idolaters, in the kingdom of Babylon. He announced to his people: O my people I turned my face towards Him Who created the heavens and the earth, and never shall I give partners to Allah. He has the power to make the stars rise and set.

# **1.2 Prophet Musa (Moses)**

Musa the son of Imran, was born in Egypt in which at that time the kings were known as Fir'awns. First statement about working ethics in Torah is in Genesis part. "In the sweat of thy face shalt thou eat bread, till thou return unto the ground; for out of it wast thou taken: for dust thou art, and unto dust shalt thou return." (Torah, Genesis 3/19)

In Torah it is suggested to respect neighbour rights and to behave in good way to them: "When thou dost lend thy brother any thing, thou shalt not go into his house to fetch his pledge. Thou shalt stand abroad, and the man to whom thou dost lend shall bring out the pledge abroad unto thee. And if the man be poor, thou shalt not sleep with his pledge: In any case thou shalt deliver him the pledge again when the sun goeth down, that he may sleep in his own raiment, and bless thee: and it shall be righteousness unto thee before the Lord thy God." (Torah, Deureronomy 24/10-13)

Another statement about poor is as following and in this statement Torah mentioning about living together with brothers: "And if thy brother be waxen poor, and fallen in decay with thee; then thou shalt relieve him: yea, though he be a stranger, or a sojourner; that he may live with thee. Take thou no usury of him, or increase: but fear thy God; that thy brother may live with thee." (Torah, Levitucus 25/35-36)

"If thou lend money to any of my people that is poor by thee, thou shalt not be to him as an usurer, neither shalt thou lay upon him usury. If thou at all take thy neighbor's raiment to pledge, thou shalt deliver it unto him by that the sun goeth down: For that is his covering only, it is his raiment for his skin: wherein shall he sleep? and it shall come to pass, when he crieth unto me, that I will hear; for I am gracious." (Torah, Exodus, 22/25-27)

"And when ye reap the harvest of your land, thou shalt not wholly reap the corners of thy field, neither shalt thou gather the gleanings of thy harvest. And thou shalt not glean thy vineyard, neither shalt thou gather every grape of thy vineyard; thou shalt leave them for the poor and stranger: I am the LORD your God." (Torah, Levitucus 19/9-10)

"And if thy brother be waxen poor, and fallen in decay with thee; then thou shalt relieve him: yea, though he be a stranger, or a sojourner; that he may live with thee." (Torah, Levitucus 25/35)

# **1.3 Prophet Dawud (David)**

Dawud (David) was not only an illustrious Prophet of the Israelites but he was also their king. The Holy Qur'an affirms: "And Allah gave him the kingdom! and wisdom and taught him of that which He willed." (2: 251). And it was said unto him: "0' Dawud!To! We have set you as a vicegerent in the earth, therefore, judge aright between mankind and follow not desire." (38:26)

He lived in Bait-ul-Lahm which was situated at the distance of ten miles from Jerusalem. He prayed: "Our Lord! Pour out constancy on us and make our steps firm and help us against those who are disbelievers." (2:249)

Allah revealed the Zabur (Book of Psalms) to Prophet Dawud. It contains lessons for the guidance of his people.

# 1.4 Buddha

The evidence of the early texts suggests that the Buddha was born in a community that was on the periphery, both geographically and culturally, of fifth century BCE northeast India. This community seems to have had two categories of people, masters and servants.

The Four Noble Truths of Budhism:

- 1. Life as we know it ultimately is or leads to suffering/uneasiness (dukkha) in one way or another.
- 2. Suffering is caused by craving. This is often expressed as a deluded clinging to a certain sense of existence, to selfhood, or to the things or phenomena that we consider the cause of happiness or unhappiness. Craving also has its negative aspect, i.e. one craves that a certain state of affairs not exist.
- 3. Suffering ends when craving ends. This is achieved by eliminating delusion, thereby reaching a liberated state of Enlightenment (bodhi);
- 4. Reaching this liberated state is achieved by following the path laid out by the Buddha.

# 2. The Greek Philosophers

For ancient Greek philosophers the question 'how should I live?' took a fundamentally prudential or self-regarding form. It amounted for them an inquiry searching how a man could secure his own happiness, fulfilment or perfection. Benevolence, altruism, philanthropy, a concern for happiness of others occupied a secondary position in their ethical recommendations. It is conceived as a condition of self-realisation of the individual. In general Greek philosophers, Plato and Aristotle in particular, found a place for restricted benevolence by emphasising the role of friendship in a fully satisfying life. Aristo somewhat made a disdainful liberality part of his conception of the ethically ideal or 'magnanimous' man.

It can be said that utilitarianism, which is a field of moral philosophy, is more directly about utility theory. Utilitarianism can be understood as a movement for legal, political and social reform that flourished in the nineteenth century. It can also be understood as the ideology of that movement. It is also a general ethical theory. As a theory of

ethics, it provides a criterion for distinguishing between the right and wrong action, an account of nature of the moral judgements that characterise action as right and wrong.

Utilitarianism can be expressed as the combination of two principles: (i) the consequentialist principle that the rightness, or wrongness of an action is determined by the goodness, or badness of the results that flow from it and (ii) the hedonist principle that the only thing that is good in itself is pleasure and the only thing bad in itself is pain. The doctrine can be expressed in the form of a single principle, the greatest happiness principle: the rightness of an action is determined by its contribution to the happiness of everyone affected by it. (Quinton, 1973).

Greek moralists unreflectively assumed a consequentialist position in developing their more or less prudential life-styles. The only way in which they conceived it to be possible to justify a type of conduct was by reference to the results to which it gave rise (Quinton, 1973).

# 2.1 Socrates (BC 470-399)

Socrates' ethical intellectualism has an eudaemological character in which he asserted that the highest good for any human being is happiness. According to Socrates, people's true happiness is promoted by doing what is right. When people's true utility is served (tending own soul), people are achieving happiness. Happiness is evident from the long-term effect on the soul.

According to him, whatever action a man chooses is motivated by his desire for happiness. All the concepts like knowledge, virtue, and wisdom are the same and man chooses an action according to what he thinks will bring him the greatest happiness. Therefore the more a man knows, the greater his ability to reason out the correct choice and the greater his ability to choose those actions which truly bring happiness to him.

According to Socrates, to answer the question 'what is happiness', the first question should be asked to an individual by himself: If all his needs were completed, or he had enough power to do anything, would he really be happy? When individual observe and attract attention to him, even all these needs mentioned above are completed, he sees that he is not happy enough. On the contrary he sees that he witnessed many disappointments, only when he is in harmony with himself he will really be happy. People who are not in harmony with themselves never be happy properly.

Socrates believes that psychic harmony is the greatest good, and that the result of it is moral behavior. He also believes that if you have a healthy body and soul then you are in psychic harmony with yourself. In the ideal soul, the reasoning part and the feelings (desires for honour) rule over the appetitive part (desires for wealth, food, etc). A properly ordered soul experiences a sense of well-being or psychological health. Thus, psychological health is something distinct from psychological stability since it depends on psychic harmony.

According to Socrates, immoral behavior is a result of an unbalanced personality and leads people to irrational behavior. Psychic harmony is a psychological condition and makes someone moral and this harmony has no motivation. Moral behavior comes from people's own beliefs and desires. If one is bad or unjust in the social sense it is because of his sensuality, greed, or vanity. According to Socrates where there is psychic harmony, the motives for injustice in the social sense will be eliminated.

Socrates did not surpass the prejudice of Greek intellectualism in ethics. It is enough to know virtue in order to be virtuous. Everyone wishes to be happy and if someone does not attain happiness, it is because he does not know the way that leads to happiness. Consequently, so-called evil men are in reality only ignorant. Thus, vice is synonymous with ignorance, so knowledge of the good is synonymous with virtue. That is why Socrates, who intended to form a virtuous youth, restricted his teaching to the search for moral concepts.

- The foundations of Socratic system of ethics can be summarised as;
- i. a choice is rational if and only if it is a choice of what is best for the agent
- ii. something is good for an agent if and only if it is morally right.

The cornerstone of Socratic ethics is the self-interested concern for happiness, that is, one's own good. But this concern requires that we act in accordance with what is just and noble, that is the moral good. The identity of one's own good with the moral good is the basis for specific Socratic foundations. Socrates shows in the book Gorgias that one's own good coincides almost completely with the moral good, since the utility of nonmoral goods, for example, wealth, depends on the possession of moral excellence.

According to Socrates, the content of goodness/benevolence covers utility and pleasure. That is why some of the historians of ethics assume that Socrates is Epicurean, so he is utilitarian. However, pleasure, which Socrates implies, is not harmfull to intellect and soul. Here intellect has a role of being informative and determinant. Thus Socrates' pleasure is under control of intellect. And also Socrates' utility view is not individualistic, but public.

# 2.2 School of Cyrene – Aristippus (BC 435-366)

Cyrene school of philosophy is a kind of discipline of Socrates, founded in the 5th century by Aristippus. He was a hedonist and urging the pre-eminent claims of bodily pleasure as an end.

This philosopher explains his thought, which he starts with a question 'what is a happy life', by answering 'life, which has as much as possible pleasure and as little as possible suffering, is a happy life'. To make life happy, someone should include as much as possible pleasure and as little as possible suffering to his/her life. For to do this, he/she should decrease needs, so it will be adjusted to life with limited needs. So by doing with limited needs, it can be benefited from all pleasures of life.

Aristippus teaches us kind of a life art that should be lived wisely. And this art can be gained by giving up desires which make people slaves of themselves. Thus, school of Cyrene derived hedonism from Socrates' eudaimonism. Later on, school of Cyrene's this hedonism concept was accepted by Epicurus (Aster, 2005)

# 2.3 School of Cynicism – Antisthenes (BC 455-365)

Antisthenes, who outlined the themes of the school, is the first philosopher of school of cynicism. He had been a pupil of Socrates in the late 5th century BC. Antisthenes has severe discussions to Aristippus' pleasure assumption.

According to Antisthenes, people should look for real happiness in desire of freedom and liberty inside. People, who reach to real happiness, know how to stay insensitive and disregarding in relation to either pleasure or suffering. This staying indifferent in relation to pleasure or suffering brings freedom from inside.

# 2.4 Plato (BC 427-347)

Plato, founder of Academy in Athens, is a classical Greek philosopher. His mentor was Socrates and his student was Aristotle. According to Plato, nothing is fine without moderation, and the thing which is pleasant becomes as pleasant with this moderation. He also mentiones about moderation in between organic pleasures and intellectual benevolence.

Unlike Aristotle's developed concept of happiness (will be mentioned below), Plato's happiness concept is more obscure. According to Plato, the Good is the source of intelligibility. He asserted that the highest goal in all of education is knowledge of the Good. According to him, human beings aim at the good, nobody voluntarily chooses evil.

Plato thinks that the masses are incapable of grasping the truth. He illustrated this in his the allegory of the cave where Plato suggests that the masses cannot see the truth directly but they are satisfied with an illusion of reality. According to Plato, the good is the source of intelligibility and happiness is the attainment of intelligibility. Thus, Plato describes his happiness concepts as the goal of life.

There is an important difference between Socratics and Plato. Both Aristippus and Antisthenes are individualists. For both of them, origin is individual. Both of them don't deal with super-individual fact as state, history, society. If people want to be really happy, they should be on their own, they should not depend on other people. In this point, Plato has disagreement with his other two schoolmates. According to Plato, people never be on their own but always live with other people. If we isolate an individual from the society he lives in, we exclude him from his own resources. Moreover, the institution called 'state' is like a human. What condition social entire is in, individual lives in the same condition. Thus to understand human being, it should be looked into the state which he lives. Therefore Plato rejects Socratics' (Aristippus and Antisthenes) thoughts. Although they seem like the followers of Socrates, Plato thinks that they are not thinking in similar perspective. According to Plato, contrary to Aristippus and Antisthenes' individualistic tendency, Socrates did not only show his skillfulness about living, but he also became the first example of moral principle which took socialization as a base (Aster, 2005).

# 2.5 Aristotle (BC 384-322)

Aristotle is a Greek philosopher who is student of Plato and teacher of Alexander the Great. His teaching about virtue and ethics is set forth in his Nicomachean Ethics.

Greek philosophy accepts that human life's main purpose is 'happiness'. However they differentiate from each other about 'what is happiness'. Aristotelian method is different from others because, according to him, each existence has

its own activity. Knowing specific activity of human shows us that what kind of an objective this human wants to reach. So it will be learned what is the 'real happiness'.

According to Aristotle, happiness (eudaimonia) is an activity of the soul in accordance with virtue and it is the highest of all goods. Happiness is the first principle and cause of all goods and it is a self-sufficient activity always chosen for itself. Unlike other virtues, happiness is the only thing chosen only for itself and not for the sake of other things. Aristotle believes that amusement is not self sufficient like happiness and he distinguished between the life of amusement and the happy life.

Aristotle proposes two possible paths to happiness as a life of virtuous activity and a life of theoria and asks which of the two is the best. The former path defines happiness as a practical vitue and in need of external goods. And the latter path theoria is contemplation of eternal truths for an entire lifetime which is the highest activity of reason. Aristotle chooses theoria. Becuase the life of practical virtue achieves happiness in a lesser sense because of the necessity of material goods in this life and the life of the theoria limits the need for material goods and perfect happiness (eudaimonia) is enjoyed by the Gods.

According to Aristotle, human being is rational as his nature. If a rational man behaves rationally and moderate, he will be behaved parallelly to his nature. 'Thinking' and 'knowing' are human's highest activities. But what can be ratio/intellect's activity in practical life? Each of the virtues is a state of being that naturally seeks its mean. All virtues are in between of two extremes, virtues are means of the two extremes. This mean is not mathematical but it is a border which can be found by ratio/intellect. The virtuous habit of action is always an intermediate state between the opposed vices of excess and deficiency. For example; with respect to the enjoyment of pleasures, temperance (sophrosúnê) is a mean between the excess of intemperance and the deficiency of insensibility. Greek thought always searches for harmony and moderation, dislikes extremes. Aristotle is an opposer to all kind of extremes, too. Thus, Aristotle is against the thoughts that reject possessions like Cynics. Aristotle emphasizes on possessions' relative values. By using them moderately, they can bring even sense and value. One another thought of Aristotle is not to ignore desires and urges totally, they should not be ignored totally, but to keep them down by ratio.

According to Aristotle, there is no direct connection between good/benevolence and pleasure. These three points should be taken into account: First pleasure is not main principle for a moral life, second pleasure occurs as a result of an action which targets virtue. And third virtue is in the action which results in pleasure.

# 2.6 Epicurus (BC 341-271)

Two more schools joined to the list of schools of philosophy in about BC 300s. One is school of Stoa and the other one is Epicureanism that took its name from the founder Epicurus. These two schools have contradictory opinions about life and knowledge.

As it is mentioned in former parts of this work, school of Cynicism and Cyrene have contradictory opinions about ethics, too. According to Cynics, it is important to exert perfect dominance on desires. After Cynics, we see some similar thoughts are repeated by Stoa. It is virtuous to exert dominance on excitements, desires because virtue gives us staying apathetic to life and death. School of Cyrene perceives life's real purpose as catching pleasure and escaping from pain. Kind of a dissidence, like between Cynics and Cyrenes, later on was seen in between Stoa and Epicureanism.

These two schools, Stoa and Epicureanism, sustained their existence by keeping alive dispute among them. However at the same time they have some similar or common opinions. The first point they agree is that human being is subject of philosophy. First they draw portraits of 'superman'. However all these 'superman' concepts were interpreted differently. For Stoa school, superman is man who beats demands and desires, knows to disregard to both life and death. They show apathy (lack of interest or concern) as a purpose to human. On the other hand Epicureanism finds its purpose on ataraxie (freedom from worry). However it can be noticed that there is no big difference between ataraxie and apathy.

According to Stoa school, first principle is people's need to understand that they are organs of the unity called world. Second principle is people's need to know their own stand in the world and so to adopt themselves to destiny which is chosen for themselves. However Epicurus thinks that world processes with respect to blind and spontaneous necessity. If people's destinty is determined by coincidences which can not be seen before, then they can have interest in products which are their own will-power. Thus, people will stay disregard in respect to life and death and by behaving rationally they will know how to distinguish things which give happiness.

Epicurus adopted the principle to attain pleasure and to escape from pain in ethics. But human should do this wisely. He should avoid from intense pleasures which bring pain at last. Human should not interest in anything more than its necessity because extremes cause to pain. People should know to keep away from temporary and
specious values such as fine and glory. Temporary values always direct people to more, and this more never ends, that is why people always stay in unrest. Thus, people should be interested in "moral pleasures" which won't cause to dissatisfaction. According to Epicurus, for to be happy, it is necessary to live moderate, to tend pleasures which are moral, and to behave in accordance with all these.

Epicurus established his school in Athens in 306 BC. In the surviving writings of Epicurus, there is little of direct relevance to the connection between utility and justice. However, virtue including justice, was not intended to limit pleasure. According to Bailey (Bailey 1928) Epicureanism is 'a system of uncompromising egoistic hedonism'. Scarre (Scarre 1994) put it, 'just as the Epicurean community practiced economic self-sufficiency within the walls of its garden, the Epicurean man cultivates an inner self-sufficiency, a contentment in his own physical and mental states and a suppression of unnecessary desires'. The only perfect pleasure was a condition of ataraxie where one lives quietly in bodily health and with little physical and psychological distress. (Rosen, 2003).

Although none of the pleasure is bad, some (involving less pain) are purer than others. Epicurus made connection between pleasure and health, pain and disease. All pleasures were good in the sense that health was good, even though some pleasures were mixed. If health was good, with disease of body or soul it becomes greatest evil.

In Epicureanism the greatest pleasure was defined by the removal of all pain, and hence the Epicurean lived quietly and peacefully in the real or metaphorical Garden (Rosen, 2003). The important virtue for Epicurus was prudence, and a considerable emphasis was placed on the egoistic pleasures connected with friendship. On the other hand, little attention was given to social values and instincts.

When it comes to 'justice' in Epicurus' system, it can be said that 'justice' means achieving security from the attacks of other people. Epicurus' state on a conception of justice is that; a pledge of mutual advantage to restain men from harming one another and save them from being harmed (Epicurus,1926). At another point, Epicurus wrote about justice in terms of being of advantage in the requirements of men's dealings with one another (Epicurus, 1926). Epicurus used here a Greek phrase, 'sumpherei en tais chreiais', for 'advantage in the requirements'. Rosen claims that Greek noun, 'chreia', also possessed a range of meanings and might be translated as 'need', 'use' or 'utility'.

For all societies in which to make compacts not to harm one another is not possible, nothing was either just or unjust. Although justice was applied potentially to all requiring, where contracts for one should not harm others, such a justice might be applied differently in different societies and under different circumstances. Where a law, which was previously considered, just, had no longer had usefulness or secured advantage, there was no longer just (Epicurus, 1926). According to Alberti (Alberti 1995) 'justice is the realization of utility by means of a contract'. The emphasis on utility allows for the separation of law from justice by rejecting the view found in Plato and Aristotle, that all law is just. And emphasis on utility leads to a notion of justice which is different from nomos (legal justice) and physis (natural justice) (Rosen, 2003).

Justice was an invention of the wise for their own good. Epicurus summed up matters with brutal directness and claimed that the laws exist for the sake of the wise, not that they may not do wrong, but that they may not suffer it (Bailey,1928). Law and justice were matters of convenience which the wise person devised and approved. Epicurus had no reason to make justice a positive part of the human condition except enabling people to obtain 'peace of soul' (DeWitt, 1954). "It represented a painful burden, and in its application as punishment justice could be extremely painful. All that could recommend it was its utility to the wise. Other members of society might have less invested in justice, as they were not cultivating their gardens as were Epicureans, and might well gain less from rules concerning not harming others. However, so long as they accepted the compact, they would be assisting themselves, as well as not harming the wise in society."(Rosen, 2003).

# 3. Medieval Times Islam Philosophers

In the seventh century, translation movements from Greek to Arabic language started and in the time of Caliph al-Mansur this movements reached its peak. The study of Islamic ethics began to take shape in the third century of Islam's emerge, with the influences from Greek ethics including Stoicism, Platonism and Aristotelianism. Al-Kindi, the first philosopher of Islam, influenced by Socrates and Diogenes the Cynic as seen in his ethical writings. Other influences can be seen in the work of Platonists such as Abu Bakr al-Razi or Neoplatonists such as al-Farabi, Aristotelian influences can be seen in the works of al-Farabi, Ibn Sina and Ibn Rushd.

### **3.1 Al-Kindi (d.873)**

Abu Yusuf Ya'qub ibn Ishaq al-Kindi (d.873) was the first philosopher of Islam and also the first author on philosophical ethics. In Baghdad, al-Kindi was involved in the scientific movement of the translation of Greek texts into Arabic. His starting point was Greek philosophy and he is reported by the classical bibliographers that he has a number of ethical treatises reflecting an interest in Socratic and Cynic thought.

In al-Kindi's writings, the personalities of Socrates and Diogenes the Cynic are united and both emerge as ideal instances of virtue and asceticism (Fakhry, 1998). Moreover, the Stoic idea of apatheia (freedom from passion) and the indifference to the vicissitudes of fortune are set out in fluent terms. According to al-Kindi, the antidote of pain is to consider that pain results either from our actions of from doing the actions of others. In the former case, it is individual's duty to avoid from doing which is the cause of pain. In the latter case, averting the pain is either in our power or it is not. If it is in our power then we certainly ought to avert it, if it is not, we should not suffer at the prospect of injury with the hope that it might somehow be turned away. The suggestion, to avoid material possessions as temporary acquisitions, reflects the influences of the Stoic philosophers.

## 3.2 Abu Bakr al-Razi (d. 925)

Another philosopher Abu Bakr al-Razi (d. 925), who is influenced by Plato, refers to Plato as 'the master of the philosophers and their leader' and to Socrates as 'the ascetic and spritual' sage in his book al-Tibb al-Ruhani (The Spiritual Physic).

A Socratic-Platonic theme which takes place in al-Razi's writings is the foolishness of the hedonistic life which turns man into a slave. People's many of pleasures are temporary and unattainable and people are attacked by anxiety or pain. But according to al-Razi, true philosopher will not succumb to pain, because philosopher understands that nothing is permanent in this world. And that whatever cannot be turned away should be ignored, since it is the product of passion and not of reason. al-Razi says in his book al-Falsafiya that: 'For reason summons us only to what is susceptible of bringing about profit sooner or later; grief does not bring any advantage... That is why the perfectly rational man will only follow the summons of reason ... and will never follow the summons of passion or allow himself to be led by it or get close to it.

Like Socrates and Plato, al-Razi believes that the soul, leaving the body, will return to its original residence in the intelligible world, after passing through an endless cycle of purifications. Death is a logical consequence of our being human and essential part of the definition of man. However, al-Razi adds another argument which derives from Epicurus that death is the deprivation of sensation and with his death man will be stripped of the sensations of pleasure and pain. Thus this is a better condition than living in pain. That is why 'according to the judgment of reason the condition of death is better than the condition of life' (Rasa'il al-Razi al-Falsafiya).

# 3.3 Al-Farabi (d. 951)

Abu Nasr al-Farabi (d. 951) was known as the "second master" (muallim-i sani) amongst his peers, Aristotle being the first (muallim-i evvel). Al-Farabi was the first systematic writer on philosophical questions in Islam. He also contributed to ethical discussions and wrote a commentary on some parts of the Nicomachean Ethics which is translated into Arabic by Ishaq bin Hunayn.

Al-Farabi follows Aristotle in ethics like dividing the virtues into moral and intellectual (Fakhry, 1998). According to him, moral virtues are perfections of the lustful part of the soul whereas perfections of the intellectual part are practical reasoning, good judgement, wisdom and sound understanding. Al-Farabi also follows Aristotle's arguments about justice which consists in the equitable distribution of 'common goods' in the city or in the state. Every member of city or state is entitled to share this 'common goods' such as security, wealth, dignity, public office, etc.

Al-Farabi deflects from Aristotle and other Greek phlosophers believing in the life hereafter in Qor'anic way. Accoring to al-Farabi, nations and citizens of cities attain happiness, worldly in here and supreme in the life hereafter, when four human needs are met. These are; theoretical virtues, deliberative virtues, moral virtues and practical arts. Worldly happiness is necessary for the attainment of supreme happiness in the hereafter. According to him, happiness is the absolute good and achieving happiness is the purpose of life. Whenever the soul of the person reaches perfection, then happiness is achieved. According to al-Farabi, if individual's desire for happiness is weak and he/she has other purposes in his/her life, then the result will be evil.

Theoretical virtues, the first one of the four themes mentioned above, consist of the sciences. The purpose is to have understanding of all the beings on these sciences. Deliberative virtues are voluntary intelligibles that vary across time and place such as events occuring accidentally or willingly, such as disasters or war. An individual cannot possess deliberative virtue without possessing moral virtue. A person has to have virtuous moral character who wishes the good for himself/herself or for others. And according to al-Farabi, theoretical virtues, deliberative virtues, moral virtues and practical arts are all inseparable.

The his famous work al-Madina al-Fadila (virtuous city), in which people cooperate and help each other for the purpose of attaining happiness, al-Farabi reflects again his devotion to Islamic utility perception. To him, on the other hand, non-virtuous city is the city whose people do not know happiness. Al-Farabi discussed these two cities' souls of the citizens and he believed that the souls of the citizens of the virtuous city are immortal. However, the souls of the citizens of the ignorant city are mortal and their destiny is to suffer. As a result, al-Farabi believed that political association should be directed towards the attainment of happiness.

Generally, it can be said that al-Farabi was greatly influenced by both Aristotle and Plato in his philosophy and his concept of happiness particularly. On the other hand, his thought was framed by Islam. He selected portions from each of these three different influences to form a complete description of happiness. So his concept of happiness is a product of his understanding of Greek philosophy and Islam. With his concept of happiness, he combines Plato's concept of the good, Aristotle's concept of eudaimonia (happiness) and Islamic concept of Jihad Al nafs (struggle of the soul).

Plato and Aristotle's concepts were given above. On the other hand, the Islamic concept of Jihad Al nafs means the struggle of the soul. According to Islam, God created man to achieve bliss (happiness) in the next life through a clearly defined struggle in this life called Jihad. By the Quranic definition, "And whosoever strives (jahada), strives (yujahidu) only for himself. Surely Allah is self sufficient, above need of His creatures." (Quran 29:6). The person who struggles with turning his inner self into a new way of living that understands the true reality where material is only a small portion.

# 3.4 Ibn Sina (Avicenna) (d. 980)

Ibn Sina (Avicenna) (d. 980) is one of the foremost philosophers in the Medieval Hellenistic Islamic tradition and one of the most important practitioners of philosophy. He exercised a strong influence over the other Islamic philosophers and medieval Europe as well. Al-Farabi's successor Ibn Sina is the author of a very short tract on ethics and he follows closely the Platonic model in psychology.

Ibn Sina speaks about the laws which are needed to be laid down as the moral habits (akhlaq) and traits (adat) which lead to justice. He divides the soul into different parts like rational, irascible, and concupiscent which correspond to the virtues of wisdom, courage and temperance respectively. Finally justice is the 'summation' of all these three. According to Ibn Sina, enforcement of justice within the state (with the existence of caliph) is necessary as the sovereign of the world and God's vicegerent on earth. The virtues of temperance, courage, and wisdom are for the well-being of human beings in this world. They can be followed adequately without theoretical wisdom. Ibn Sina presents theoretical wisdom as being so important that one can attain happiness only by acquiring it as well as these three virtues, all of which add up to justice. Ibn Sina distinguishes himself from Farabi by insisting on the possibility of acquiring temperance, courage, and practical wisdom-or justice-without possessing theoretical wisdom. In other words, unlike Farabi, Ibn Sina does not perceive all the virtues to be intellectual or to be grounded in sound intellectual understanding.

Make separation between the practical virtue and the theoretical virtue does not fully account for Ibn Sina's moral teaching. From what appears in his treatises that moral habits are directed to the liberation of the soul from the body. Thus they serve the ultimate goal of theoretical virtue, that is the soul achieving a free perception of God and the divine intelligences. It is not clear, however, how the moral habits lead to justice. The only explanation that comes to mind is that insofar as some human beings center their thoughts and activities on other worldly concerns.

Ibn Sina differs here from al-Farabi too since he starts with the basic human needs and ascends from them to the larger issue of law- giving and providing for justice. On the other hand, Al-Farabi begins by thinking about ultimate human happiness. Ultimate human happiness is about the highest ends of human beings rather than their humblest beginnings or it is about their noble concerns rather than about their basic needs.

# 3.5 Ibn Rushd (Averroes) (d. 1198)

Ibn Rushd (Averroes) (d. 1198) is regarded as one of the important Islamic philosophers. He set out to integrate Aristotelian philosophy with the Islamic thought in the twelfth-century of Islamic Spain. He produced commentaries on Aristotle's Nicomachean Ethics and also Plato's Republic which is relevant to his ethical theory as well.

According to Ibn Rushd, the principal virtues correspond to the perfection of the three parts of the soul are the rational, the irascible, and the concupiscent. Then he describes justice along Platonic lines as the 'harmony' of the three corresponding virtues of wisdom, courage and temperance. As Aristotle stated in the Nicomachean Ethics, it has two subdivisions which are common or universal, corresponding to 'perfect virtue', and particular. However, Ibn Rushd does not identify happiness with the contemplative life, but rather with conjunction (ittisal) to the active intellect, which the Muslim Neoplatonists had regarded as man's ultimate goal.

In Muslim thought, everything they need to know about moral behaviour is encapsulated in Islam. However, Ibn Rushd argued that a distinction should be drawn between moral notions and divine commands and here he follows an Aristotelian approach (Leaman). According to Ibn Rushd, the answer of question "what is the purpose of a human being?" is that; one of the ultimate aims is to be happy and to avoid actions which lead to unhappiness. Moral virtue leads to happiness. If people do what they should do in accordance with their nature, people will be able to achieve happiness. This happiness may be interpreted as a mixture of social and religious activities or as an entirely intellectual ideal. However, neither religion nor philosophy would approve of entirely intellectual ideal as the ultimate aim for the majority of the community. It is possible for someone that he/she would try to live apart from the community with concentrating entirely on intellectual pursuits, but this way of living is inferior to a life in which there is a concentration upon intellectual thought but combined with integration within the practices of a particular society.

Ibn Rushd, inspite of working within an Islamic context, does not identify happiness and misery with some aspect of the afterlife since he was unable to accept the traditional view of the afterlife. Here Oliver Leaman, who has many works about Ibn Rushd, claims that without religious imagery, ordinary believers may find it difficult to understand that our moral actions affect not only ourselves but the happiness of the whole community, not just at a particular time or in a particular place but as a species. With our bad behaviours, we damage our own chances of human flourishing, and this damage affects our personal opportunities for achieving happiness and maturing as people. It is also resulting to the weakening of society. According to Leaman, while it is possibly true that the misery of evil-doing may not follow us personally after our death, it may well follow the community. The notion of an afterlife points to the wider terms of reference in which moral action has life.

# 3.6 Ibn Khaldun

Another philosopher Ibn Khaldun, who lived in 14th century, centred his economic ideas generally around the ideas of justice, hardwork, cooperation, moderation and fairness. He emphasises Al-adl (justice) as the bedrock of the economy, and lack of justice leads to the breakdown of the state. Some of his writings may appear as secular. For instance; "Civilisation and its well-being as well as business prosperity depends on production and people's efforts in all directions in their own interest and profit" (Muqaddimah, Volume 2). However, Ibn Khaldun insisted that man must avoid from evils, must improve himself, and must give preference to matters of the next world against this world (Muqaddimah, Volume 1).

According to Ibn Khaldun, extravagance and luxurious living lead to the destruction of the state. "Sedentary people are much concerned with all kinds of pleasure. They are accustomed to luxury and success in worldly occupations and indulgence in worldly desires. Therefore, their souls are adored with all kinds blameworthy and evil qualities" (Muqaddimah, Volume 1, 225).

Another issue Ibn Khaldun emphasises is cooperation. He says that "the power of the individual human being is not sufficient for him to obtain the food he needs through cooperation, the needs of a number of persons, many times greater than their own number can be satisfied" (Muqaddimah, Volume 1, 69) (Ibn Haldun, 1977).

Above the economic philosophy of Ibn Khaldun was mentioned shortly, but, his Muqaddimah covers a large number of other areas about economy like money, value, market, population, growth, international trade, etc. When dealing with micro or macro economic issues, he demonstrated perfect competence in generating theories. In his work, Ibn Khaldun synthesises the ideas learnt from the Qur'an and Sunnah, and from other sources which were converted into powerful theories.

# 4. Conclusion

Human concepts like good and bad, right and wrong, virtue, justice, and happiness were the concern of human civilizations through millenniums. Historically the foundations of human ethics are laid by divine revaliations through prophets. Then Greek phlosophers and Muslim scholars contributed to the theory till the begining of the modern times.

With the begining of the 20th century industrial society began to transform into information society and risk and uncertainty became prior and diagnostic feature of human behaviour. And now with these changes new structure of society is multi-dimensional, more complicated and uncertain. While this theory became accepted and is using in economics, criticism voices started to become louder. Critics to economics' deductive, abstractive and pure rationalist method focused especially on uncertainty and risk that propelled from that analysis. Among them only one was seem as an strong alternative to expected utility theory: Prospect theory which was found by Daniel Kahneman and Amos Tversky in (Kahneman and Tversky 1979). They dealt with utility concept from the cognitive point of view, Daniel Kahneman and Amos Tversky's studies were the earliest studies of human decision-making by cognitive psychologists. Development of the theory through modern times may be the subject of another work.

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# **Contribution of University on Economic Development**

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Abstract: Economic development refers to economic growth accompanied by changes in output distribution and economic structure. These changes: improvement in material, a decline in an agriculture's share of gross national product(GNP), increasing share of industry in GNP, increasing education level, substantial technical advance and etc. Human Development Index is one of the measurement of Economic development. Economist need skillful labor force is provided by universities to ensure qualified more production with value added for economic growth and development. We saw that universities contributed innovation to become monopol in world market, relationship between domestic private companies and foreing ones, ensuring sustainable development, to become guide for foreign and domestic firms. In addition, universites contributed as information office. In this study, we analyzed contribution of technology and internet to the university and contribution of universities to economic development of country. We have worked and searched in private university in foreign country for 12 years. So, we aimed productive study with work experience abroad, observing and interactive study with academicians in other universities. We analyzed our study under three main titles; Functions of universities and categorize of countries. How to improve level of economic lesson by using internet among countries. Contribution of universities to level of economic development

#### Introduction

During the last few centuries the western economies have experienced an economic growth never before seen in history. This change has mainly been caused by knowledge, compared to previous history where land, natural resources, labor or machines were the factors determining economic growth and development. Long run economic performance during the last few decades, known as the knowledge economy or the information age, has consequently been driven by innovation and technological change instead, so, The production of new knowledge plays an important role in economic growth, international trade and regional development. (Rindeskar, 2005) The central purpose of this study is to analyze the importance of human capital are educated by university for generation of economic development through its effect on knowledge production in the innovation. A key driver to achieve the economic, social and physical regeneration of city and region University makes environment where science and business work together. (Goddard, 2009) It was seen that there is impact of university on economic development. Innovation and research which are studied by universities are the main argument on development of any country. These are the key of ensuring welfare.

# Functions of University and Classification of Countries

#### **Functions of University**

The Universities are schools of education as well as research. But, main reason for their existence is not to be found either in the just knowledge conveyed to the students or in the just opportunities for research afforded to the academicians in faculty. These functions could be performed at a cheaper rate. ( www.jstor.org/pss/40218022) When we pay attention definition of economics we see two major topics: unlimited human wants and limited resources. The twenty-first century is universally recognized as a time for developing knowledge-based economies and digital information technologies. With the rapid socia-economic changes, the democratization of government, structural shifts in production and the rapid growth of value systems of recent years, serious new challenges have presented themselves, with regards to the maintenance and function of higher education. In order to meet these challenges, higher education must continue to advance through innovation, effective adjustments, planning and ability to predict

### 2<sup>nd</sup> International Symposium on Sustainable Development, June 8-9 2010, Sarajevo

the future or vision. Universities are not only a school of knowledge, culture and technological innovation but they are also important centers for the cultivation of a nation's resources. Therefore, by bringing the university's function into full play, can it provide an essential foundation for motivating academic and technological innovation and assist with the economic development of a country. It is also clear that university competitiveness is a major indicator of a nation's competitiveness and that the excellence of a nation's universities is an important key to increasing a nation's sense of competitiveness. (Mu-lin, 2002) The two poles of the social function of universities are the academics inherent in universities and the more diverse demands from society, which are dialectic unity. Academics are inherent in universities and the function of universities that focused on social demands is the sociality of universities. Academics are the internal cause of multiple functions of universities while social demands are the external one. The potential of universities finds expression in the external cause of social demands, without which the potential is only potential elements and will never turn into reality. On the contrary, without the potential of universities social demands cannot make the products which society is in need of. Exchange between universities and society is the bridge that connects the two parts. Universities as a social organization have basic characteristics of all social organizations. Sociality is one feature of human organizations, being that "organizations composed of human all exist in society as part of it and for the sake of it." The potential that enables universities' exchange is their academic activities, which underlie the functions of universities. Universities' function of criticism is closely linked with the objective, fundamental, and pioneering academic activities. "It is the characteristic of universities' serving society that in addition to paying attention to the immediate demands of society, universities should be pioneers to be ahead of social progress and provide new thoughts and opportunities for sustained development." It is the objective and pioneering academic activities that enable universities to correct the defects resulting from the pursuit of self-utility on the part of other social organizations and to criticize society. The university function of international communication is the product of the objective academic activities, which makes it possible for people from different countries and with different ideologies to make discussions and exchanges on objective issues in the contemporary world. (Liu, 2005)

#### **Classification of Countries**

We believe that there is a close relationship between function of university and economic development. We think that you will no doubt about the importance and broad applicable of economics after reading and studying this study. Let's take an example one branch in university as faculty of economics and administrative sciences. Our aim is to allow students to understand economic environment, And to show you how to apply economic principles to actual events. We tried to show most of our examples applications, and extensions are drawn from the real world.

We can count some way to define economics:

- is the social science that deals with such problems
- is a study of mankind in the ordinary business of life
- is a broad-ranging discipline
- is the study of the use of scarce resources to satisfy unlimited human wants.

Also we can count some definition of economists: are innovators, tinkers, and inventors in their own way.

Societies face lots real world problems, and history shows that economic ideas can produce waves to solve these problems. When we categorize countries in the world we see three ones. These are:

# 1-Developed Countries

# 2-Developing Countries

#### 3-The Least Developed Countries

Each society requires to past upper level to live comfortably. For that Economic Growth and Economic Development should be at level required. The economy sometimes grows and sometimes shrinks. World faced with global crisis and reduced production speed, so, global GDP fell down from 3.7 per cent in 2007 to 2 per cent in 2008 (UN, 2009)When we compare developed and least developed countries we see that there is big gap each other. It is said that per capita income in developed country can be over 12 000 \$ yearly. On the other hand a dollar a day means 365\$ yearly. In addition society experiences such problems: Such as unemployment, price stability, unproductive production, unfair competitive, inequity distribution income, maximizing profit, shut-down point etc. to solve these problems economists use some instruments. To produce more and more production we increase input but this is not enough. We need time and high level technology. Latest technology gives a hand to understand easily. High level technology is ensured and used to reproduce by universities. For example let's analyse relationship between internet and a faculty. I mean university innovates technology then uses it to improve teaching's quality.

#### How to Improve Level of Economic Lesson by Using Internet Among Countries

When you study economics, you are probably wondering, why should we study economics? Actually, people study economics for a number of reasons. Many people study economics because they hope to make money. Some of them are worry that they will be illiterate if they don't know or understand the laws of supply and demand. People are also concerned to learn about how we can improve our environment or why countries such as Russia and china are moving from a planned to a market economy. As a voter we are interested about economy. Because which party's way is better for us. By using our vote we become to select party's prior investment. At the same time if we understand economy we can put forward an idea about meaning of economic growth, per capita income, distribution of income, foreing direct investment, exchange rate, economic crisis (*Faced with the current economic crisis, many governments have identified enhanced ICT use as a strategy to quicken recovery*), and etc.

The word *economy* comes from the Greek word *oikonomos*, which means "one who manages a household." At first, this origin might seem peculiar. But in fact, households and economies have much in common. Economics is social science concerned with the production, distribution, exchange, and consumption of goods and services. Economists focus on the way in which individuals, groups, business enterprises, and governments seek to achieve efficiently any economic objective they select. Lesson of economy is presented at Universities, institutions of higher education that offer programs beyond the high school level. Colleges and universities provide necessary training for individuals wishing to enter professional careers. They also strive to develop students' creativity, insight, and analytical skills. To train good economist at universities, we can benefit from internet for teaching, systematic presentation of facts, ideas, skills, and techniques. (Samuelson & Nordhaus, 2001)

Although human beings have survived and evolved as a species partly because of a capacity to share knowledge, teaching as a profession did not emerge until relatively recently. The societies of the ancient world that made substantial advances in knowledge and government, however, were those in which specially designated people assumed responsibility for educating the young. Internet or computer-based global information system is composed of many interconnected computer networks. Each network may link tens, hundreds, or even thousands of computers, enabling them to share information with one another and to share computational resources such as powerful supercomputers and databases of information. The Internet has made it possible for people all over the world to communicate with one another effectively and inexpensively. Unlike traditional broadcasting media, such as radio and television, the Internet does not have a centralized distribution system. Instead, an individual who has Internet access can communicate directly with anyone else on the Internet, make information available to others, find information provided by others, or sell products with a minimum overhead cost. The Internet has brought new opportunities to government, business, and education. (UN, 2005)

Many individuals use the Internet for communicating through electronic mail (e-mail), for news and research information, shopping, paying bills, and online banking. Educational institutions use the Internet for research and to deliver courses and course material to students, for example distance learning (*Distance services, dispensed by cell-phone, internet telephony or websites, can allow skills that are in short supply to benefit larger numbers of people.*) (UNDP 2009) Scientists and scholars use the Internet to communicate with colleagues, perform research, distribute lecture notes and course materials to students, and publish papers and articles. As we look internet users by level of development 2000-2004 (see Table) we can see that developed countries is 73% in 2000 57% in 2004 years, developing countries are 25% in 2000 years 38% in 2004, South-East Europe and CIS 2% in 2000 years 5% in 2004 years. At the end of 2008, there were an estimated 1.4 billion Internet users around the world. In developing countries now account for more than half the world's Internet users. A little over one fifth of the world's population used the Internet in 2008. (UN, 2009)

Classification	2000	2001	2002	2003	2004
Developed Countries	285 429 829	344 585 162	402 012 514	433 307 644	501 756 193
Developing countries	96 367 167	137 712 413	204 925 742	256 845 766	332 998 292
South-East Europe and CIS	5 982 116	8 963 563	13 653 481	23 745 186	40 877 486

**Table 1:** Internet users by region and level of development

#### Contribution of Universities to Level of Economic Development

Economic development refers to economic growth accompanied by changes in output distribution and economic structure. These changes: improvement in material, a decline in an agriculture's share of GNP, increasing share of industry in GNP, increasing education level, substantial technical advance and etc. Human Development Index (HDI) is one of the measurement of Economic development. As we pay attention table below we see that HDI contains three parts such as life expectancy, adult literacy, and GDP. GDP measures the total output and total income of an economy. If we care about the happiness of a typical individual in an economy, it makes more sense to look at GDP per capita. We can understand whether income is shared equally between its citizens.(Begg & Fischer & Dornbusch 1997)We can measure level of country's economic development by looking HDI too. All three units in this index are related directly with education, talent, knowledge, and learning. All these activities happend and occur in university. According to Human Development country, if HDI of country is between 0.899 and 0.800 it is high human development country, if HDI of country is between 0.799 and 0.500 it is medium human development courty, if HDI of country less than 0.499 it is low human development. (UNDP, 2009) When we see table below we can say that Turkmenistan is medium human development country in 1998.

Turkn	Turkmenistan/ Human Development Index (HDI)							
	Life Expectancy years	Adult literacy above 15 (%)	Combined gross enrolment ratio (%)	Real GDP per capita \$	Life Expectancy Index	Educational Attainment Index	Real GDP per capita \$	HDI
1997	64.7	98.8	71.0	2683	0.690	0.897	0.427	0.671
1998	64.9	98.8	65.0	3162	0.665	0.875	0.493	0.678

 Table 2 : Turkmenistan HDI

It is accepted as inevitable that we live in a world accelerated change. As people, we can see creative opportunity, or we can be demoralized as we watch companies and people come and go. As a region, we are always going to be in the position of retention -- companies, people, and capital -- as we also search economic development opportunities for expansion and attraction. The reality is that regions like Central Upstate New York compete with regions around the world that are already organized to attract capital investment and jobs. If we look at regions that are considered economic powerhouses, it's easy to see a pattern of success. Such as; the availability of skilled labor, access to capital, investment in R&D, proximity to colleges and research institutions, transportation and information links to markets, networks of suppliers, favorable tax and cost of business structures, business-friendly local government climates and regulatory environments, and a high quality of life. They are also places that project success because they have mounted highly effective regional marketing programs based on their unique strengths. (Hartsock 2007) Most universities' primary economic roles are the training of highly qualified personnel and the production of new knowledge. While these roles are more important than ever in today's knowledge economy, universities have also moved to occupy a new and central role in regional innovation ecosystems. (TRRA 2007)Universities need to focus upon innovative research activities which improve the quality of the regional environment. This includes research that impacts the traditional areas such as tourism, or more broadly, the service sector, biomedical research, coastal/environmental issues, and oil and gas. (Trumbach & Lundberg p.3) None of this serves to prove that universities are unimportant. In fact they are crucial. The government has acknowledged that the most successful technology grouptas in the USA and UK are located in geographical proximity to centres of research excellence in universities, such as Stanford, University of California, Massachusetts Institute of Technology in Cambridge Massachusetts, Austin in Texas and Cambridge, UK. (Fazackerley, Smith & Massey 2009) New roles require new approaches. Universities are starting to move away from a narrow focus on patents and licensing to acknowledge knowledge flows out into the market, and to establish supportive policies, programs and infrastructure to make these processes more efficient. Universities are also starting to support entrepreneurship and to lead or partner with other regional stakeholders in regional economic development efforts.

It was seen that universities have lots contributions, but here we will study three main key roles. The following sections provide a sample of the different roles universities can play with respect to innovation and economic development.

### First; Development of highly qualified personnel

Providing skilled graduates is one of the primary economic contributions of universities and a highly effective means of transferring knowledge and increasing the absorptive capacity of firms for innovative ideas and discoveries. Firms are attracted to the large pools of talent that universities generate and the availability of highly qualified R&D personnel is a key factor in R&D site selection. Regionally, the concentration of creative, highly skilled talent is a critical factor in cluster development and dynamic urban economies. Universities that are effective generators of technology-based growth are able to recruit and/or retain star researchers. Universities also play an important role through industry education and training partnerships, delivering non-degree educational programs targeted to different industry sectors. These may include graduate certificate programs in technical or management areas, executive development programs, weekend MBA programs, and corporate-focused distance education. (TRRA 2007) The increased importance of human capital is most evident in the well developed economies where the structure has undergone considerable changes since the 1980's. According to Romer (1990) the output per worker increase that characterizes the western world during the last decades is explained by both technological progress and a more effective labor force. Some economists stress that a well functioning higher educational system is one of the most important elements of the modern economies. Not only because of the development and growth in the long run but also because of the necessity of being competitive in the globalized world and international market of today. (Gerdne, 2005) Also we should pay attention that economic growth and development is spreading to the east of world because of skillful labor force. Nations who understand importance of education improve their standard of living.

### Second; Research and knowledge production

Universities benefit regional firms through knowledge spillovers – knowledge generated by universities at lower cost than firms can produce it themselves. As firms located by universities tend to obtain knowledge at lower cost than firms farther away, firms concentrate around universities creating beneficial cluster economies. While universities are not the main source of external knowledge for firms, high-technology regional economies are usually attached firmly by great research universities. These contribute patents, licenses, contract research, consulting and problem solving for industry, design, engineering and testing services, often early in the innovation cycle when firms and industries are seeking ideas.

Strong industry-university connections are needed, however, to connect a region's research and industry strengths. Industry is rarely involved in the choices universities and their faculty make when it comes to building research strengths. Some state governments fund R&D, technology applications, and other programs to foster emerging industries or build stronger relationships between industry and universities. Overall, though, efforts to create critical mass in research areas critical to industry are important and do have an effect.

#### Third; Technology transfer

Most universities in North America today have some form of technology transfer office (TTO). However, commercialization indicators (patents, licenses, university spin-offs) show that significant and sustained commercialization success is concentrated among only a small number of institutions. Most technology transfer is actually informal, involving publications, conferences, and informal exchanges. Patents rank low in most industries except for pharmaceuticals, therefore, indirect mechanisms for the transfer of new ideas and innovations may be more important. Most favour licensing for cash, followed by licensing for an equity stake and sponsored research. This revenue maximizing approach tends to encourage a "home run" mentality, focusing limited time and resources on the technologies that seem to promise the greatest and fastest payback. Technologies with longer-term potential or diffuse public benefit tend to be overlooked.

Most universities experience technologies "going out the back door." Many researchers circumvent their TTO when they patent and patents with greater value are taken directly to the private sector more often. Firms express difficulty in dealing with TTOs, citing staff inexperience, lack of business knowledge, and a tendency to inflate the commercial potential of patents. As a result of this dynamic, the more fundamental goal – to maximize the potential for university-based inventions to result in commercialized new products and innovations – remains unmet in many cases. Successful universities seek to maximize commercialization volume and speed rather than revenue,

although their revenues often remain substantial. They have begun to codify a broader range of technology transfer pathways and to redefine the role of their TTO. There are different volume models of technology transfer but all:

Provide rewards for moving innovations into the marketplace

Focus on faculty as the key agents of innovation and commercialization

Emphasize greater standardization in faculty and industry interactions.

Universities are only one side of the technology transfer equation, however. Firms need the absorptive capacity to realize the commercial benefits of basic research. (TRRA, 2007)

# Universities in different countries

Recent changes in the universities of developed countries suggest the emergence of an entrepreneurial model of academic research. The key feature of this model is acceptance by universities that they have a responsibility not only to provide teaching and carry out research, but also to contribute directly to economic growth of the society. This new model is being presented to developing countries as a way of encouraging entrepreneurship among their researchers, of making an awareness of the needs of businesses, and of attracting industry funding. Some successful examples to which this model has been applied in Mexico, and in Brazil. There are various obstacles to the widespread adoption of the entrepreneurial model of a university in the developing word. For example, universities can introduce changes to facilitate and promote relationships with industry, and indeed many have already done so. But if the demand from industry for local knowledge production is weak and unchallenging, the result will probably be an underdeveloped entrepreneurial university. Another source of difficulties, (see table 3), is that developing countries have few researchers, and, given the general lack of resources in such countries, these have to work with tight budgets. (http://www.scidev.net/en/policy-briefs/the-role-of-universities-in-knowledge - production-.html)

	GDP	Population	R&D spending	Researchers
Developed countries	61.1%	22.3%	84.4%	71.6%
Developing countries	38.9%	77.7%	15.6%	28.4%

**Table 3.** Distribution of the world's GDP, population, research and development spending and academic researchers

There are some 3 300 higher education establishments in the European Union and approximately 4 000 in Europe as a whole, including the other countries of western Europe and the candidate countries. They take in an increasing number of students, over 12.5 million in 2000, compared with fewer than 9 million ten years previously. They employ 34% of the total number of researchers in Europe, with significant variations from one Member State to another (26% in Germany, 55% in Spain and over 70% in Greece). In order for European universities to play a key role in achieving the strategic goal set at the Lisbon European Council, i.e. to make the European Union (EU) the most competitive and dynamic knowledge-based economy in the world, this Communication is intended to start a debate on the role of European universities in the knowledge society and economy.

(http://europa.eu/legislation summaries/education training youth/lifelong learning/c11067 en.htm)

### Conclusion

There is a close relationship between universities and economic development. It was analyzed that to reach high level standard of living and to produce qualified goods and services country needs skilfull labor force and high level technology. Those who pay attention HDI see three main legs ; production, education, and life expectations which are related with university and development. People in this century knew importance of competition and to be succeed in that race they are using latest technology for example rate of using internet is rising year by year. Perhaps, rate of using internet in developing countries is higher than developed countries. It is clear that the role of universities in innovation is great too. Universities that are active at the heart of successful technology groups do not just spin out companies. They develop highly-skilled people who move between industry and academia; they develope businesses and provide expertise; they produce knowledge that is used by technology businesses; they provide public space in which people from various overlapping branches of research meet. It was seen that universities contribute directly nations' economy, especially this impact was more in developed countries than developing countries. It is clear that the following sections provide a sample of the different roles, universities can play with respect to innovation and economic development.

First; Development of highly qualified personnel Second; Research and knowledge production

Third; Technology transfer

Time and technology is the main factor to produce more but both of these factors are used by skillful labor force who is talented in university. Secondly innovation can be done in university too and transfered to company or/and market. These functions of universities above should be reachable and cheaper too. Because this implements spirit of definition of economics.

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# The Importance of Numerical Flexibility In Turkish Labor Market and Competition Policy

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**Abstract:** Numerical flexibility, which has been common since Atkinson (1984), can be defined as a situation where the number of staff and the number of hours worked can be increased or decreased depending on the demand for labour. Within the "flexible firm model", numerical flexibility is seen as being designed to facilitate a rapid adjustment in headcount, in line with short-term changes in the level of demand for labour so that the number employed equals the number required at any time. Based on Labour Law no 4857, Turkey has adopted this approach as a competition policy in order to provide flexibility into labor market and to promote the competition of Turkish firms. Therefore, in this study, flexibility-based tools are discussed and evaluated in terms of competition policy.

### Introduction

The flexible firm model developed by Atkinson (1984) resulted from studies carried out on the changing nature of employment in the UK during the 1980s. Atkinson concluded that changes in technology, training costs, working time and labour supply were the factors influencing and driving change in UK employment policies and strategies. The changes in employment policies and strategies, Atkinson believed, resulted in the formation of two employee groups—the core and peripheral. The core group consisted of full-time permanent workers and the peripheral group consisted of part-time, temporary and contract workers ( collectively termed "atypical" by Atkinson).

Today, flexibility in labor market has been a new competition strategy for firms and there has been a significant growth in flexible or "non-standard" forms of employment. Since laborforce is a variable factor of production and because of impossibility of perfect substitution of investment goods for laborforce using today's technology, forces dynamic conditions in goods and factor markets to have a more flexible structure in terms of employment forms of firms and restructuring the job schedule. Hence, flexibility in labor market as a competition strategy can be expressed in two ways; external flexibility and internal flexibility.

External flexibility, which allows firms to adjust demand for labor to workload, and numerical flexibility which is called employment flexibility are strategic methods and policies for firms to harmonize to rapidly changing economic conjuncture. Firms who adjust the number employed to workload are defined as "flexible firm" and together with core laborforce of these firms, they—depending on business conditions— employ other kinds of employment such as temporal worker, part-time worker and external service act, and peripheral labor (Felstead, 1999, p.10). Therefore, numerical flexibility will be obtained by firm from employment of peripheral laborforce. Numerical flexibility is defined an employment type which enables employment of part-time and temporary worker according to fixed-term non-standart employment contracts as well as full-time workers with open-ended employment contracts (Kutal, 2002, p.33). This aspect of numerical flexibility has been taken into consideration and

flexibility in competitive market economies means the required use of workers when needed (TISK, 1999, p.23). This definiton puts forward the importance of numerical flexibility to firms.

On the other hand, it has been stated that the diffusion of flexible employment types helps developing countries to employ low-waged laborforce to accelerate their economic growth.

Working hours flexibility known also as internal flexibility creates another dimension of labor market flexibility as a competition strategy. Flexibility in working hours, in case when normal work period does not response to labor supply and demand, is defined as flexibility in the period worked in response to a change in work load of employer and in workers' demand for income-leisure time—within normal working hours limits (OECD, 1990, p.23-24).

It is stated that working hours short-cut is a different application of working hours flexibility (Bosch, G, P. Dawkins and F. Michon, 1994, p. 25–27). This method enables firm to adjust its labor demand to a fluctuation in demand for its goods produced. According to the labor demand model, it is assumed that firm has to adjust its labor demand to a change in economic conditions (Borjas, 1996, p.138). it is further assumed that working hours flexibility is a strategy in which firm aims to protect its competitive power accross firms (Kuzgun, 2005, p.34).

Based on a OECD regulation in 1985, it is pointed out that flexible working hours constitutes the numerical aspect of laborforce flexibility and comes to the same manner with the flexibility in labor input costs (Bosch, G, P. Dawkins and F. Michon, 1994, p. 25). In the same point of view, flexibility in working hours gives an advantage to firm to give a quick response with a minimal input cost to fluctuations in demand in goods market. Further, while working hours flexibility allows firm to feasible use of laborforce in number and time needed (Centel, 2002, p.239). On the other hand in terms of workers it means that "...it is an aggrement between employer and employee so that working hours needs to be adjusted to employee's conditions" (Centel, 2002, p.243).

## 2. Flexibility in Turkish Labor Market As A Competition Strategy

#### 2.1. Flexibility As a Firm's Competition Strategy

It has been seen that factors which determine managerial strategy of a firm are aggregated under the two headings as external and internal; across external factors the state of markets, competitive conditions, economic fluctuations and legal regulations are mentioned, as for internal factors the human source is pointed out (Ergin, 1992, p.50-56). In this respect, within the context of new Turkish Labor Law, regulation neccessity for numerical flexibility and flexible working hours constitutes the legal framework of firms' new competition policies.

Within this framework, part-time working, on-call working, compensatory working, short working, temporary secondment and labor subcontractor applications are considered. Among these, though temporary working has been expensively applied in Turkish labor market, it had not been legaly arranged. On the contrary, on-call working, compensatory working and temporary secondment have found place within the new labor law context.

In Turkey, the factor that improves the effectiveness of labor market flexibility on determining firm's competition strategy has been the legal permittance given to private employment aggencies to be established. In order to shorten the temporary unemployment period, importance is attached to the matching of unoccuppied jobs with the people looking for a job. Thus, the private employment agencies have been accepted as instruments of active employment policy for the improvement of the matching capability of the labour market besides the public employment institutions. "*The aim of the employment service is to enable employers to identify and employ workers who are equipped enough to perform their jobs, and to help individuals find their first jobs, change jobs during their career, and to find new jobs when they become unemployed.*"

(http://www.oas.org/udse/esponal/documentos/cancun/01developingefectivES-D,Fretwell-docum.pdf).

As of April 2010, 277 private employment agencies have started to operate and they have been distributed among 19 provinces in Turkey. These provinces are Adana, Ankara, Antalya, Balıkesir, Bursa, Denizli, Diyarbakır, Eskişehir, Gaziantep, Hatay, İstanbul, İzmir, Kayseri, Kocaeli, Konya, Muğla, Sakarya, Tekirdağ and Trabzon (<u>http://statik.iskur.gov.tr/0252/iller/01-T%c%3bcm%20Liste.pdf</u>). Meanwhile, 126 of these private employment agencies have been closed and the licences of five agencies have been cancelled by ISKUR (<u>http://www.iskur.gov.tr/loadExternalPage.aspx?uicode=statozeisthdamburodagi</u>).

These data show that private employment agencies in Turkey have created a new sector within the service sector. While there is no data on how many people are employed by private employment agencies in Turkey, it is supposed that they have created labor opportunities at a specific rate. The indirect contribution of private employment agencies appears at the stage of providing matching services. Structural unemployment is one of the features of the labor market in Turkey. It is considered that thanks to these agencies, the decrease in the period of looking for a job is a partial solution for the structural unemployment. It is possible to say that 1.5% of those applying to private employment agencies in Turkey are already engaged in a business (Kuzgun,2008:12). Life time of a firm is the outcoming factor and it is based on the economic activities in the effects on the employment level.

It is observed that the fact that employment service is provided by private sector firms as well as public institutions has led to creation of a sub-sector within the service sector and to creation of new job opportunities. This sector has been accepted as

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an emerging market by the EU countries and it is stated that new employment opportunities have been created for 1,3 million people in the European Union in this way and that this figure corresponds to 1,9% of total employment. (http://www.euro-ciett.org/fileadmin/templates/eurociett/docs/position\_papers/EurociettPositionPaper\_Lisbon\_Staregy\_March\_2006.pdf)

#### 2.2. The Reasons For Adoption of Flexibility in Labor Market As a Competition Strategy in Turkey

These reasons can be classified into two sub-headings.

#### 2.2.1. External Factors

The first external factor is globalization and its effect on the decisions regarding productive organizations of firms in Turkey. The second is to adopt the flexible labor market approach as it did in EU in the adaptation process of Turkey to EU.

#### 2.2.1.1. Globalization

Since competition in domestic and international market has gained big importance, recent atypical or nonstandart job contracts are emerged as well as typical/standart or normally interpreted job relations and job contract concepts. It is pointed out that, in process of globalization, the effect of international trade on employment has been more improved (Liemt, 1997: s.240). In terms of competition, in the short-run, benefiting from the nature of labor force being variable factor of production in order to enhance the competitive power , firms use peripheral labor force in which they employ labor force in accordance with the workload. In this regard, it is agreed that the types of Post-Fordist organizations has been recently appeared in developed and developing economies by the result of coercive nature of international trade (Felstead,1999, s.9). Taking into consideration further the fact that the pressure of globalization and competition leads firms to seek for reducing the costs, it is stated that flexibility in the general level of labor force costs is one aspect of flexibility in labor market (Elliot, 1997, s.301). Notably in the stage of economic crisis, providing flexibility in adjusting the employment costs is critically important for competing firms. Furthermore, a relationship is constituted between the use of labor force and having a flexible position and, it is emphasized the importance of possessing a flexible structure during the crisis (Arıkboğa, 2001, s.54). In terms of Turkey, it is expressed that the flexibility in labor force has risen as a system driven by globalization (DPT, 2001b, p.38).

#### **2.2.1.2. The** Adaptation Process of Turkey to European Union (EU)

According to Kuzgun (2004), another reason of introducing different types of flexible employment into the new Labor Law is the adaptation process of Turkey to EU and it plays an important role during this process. The same approach has also been followed in the Eight Five-Year Development Plan (DPT, 2001, p. 145). This adoption, globally, has proved the fact that the EU is influential in individualizing the work relationships by the case in Turkey. Besides that, together with some types of flexible employment, absence of legal regulations seemed to be a lack in Turkey. This lack is first put on the agenda in the project of improving employment and efficiency in labor markets.

#### 2.2.2. Internal Factors

These factors resource from the structural futures of Turkish economy and labour market.

### 2.2.2.1. The Ever-Growing Unemployment

In the *aftermath* of *World War* II, the numerical flexibility concept in the labor market in industrialized economies is another factor in determining different types of flexible employment and subcontracting which enables labor market to become flexible. On the other hand, it has claimed that the oil crisis in the mid of 1970s had strengthened the relationship among flexible types of employment producing a new unemployment wave (Tuncay, 1995, p.57)

Therefore, a tie between widespreading flexible types of employment and unemployment is constructed and at the end of the 20<sup>th</sup> century, as types of flexible employment become widespread, so does the employment possibilities (Felstad, 1999, p.3). Likewise the idea that holds that there is a linear correlation between flexibility and levels of unemployment rates and that reforms need to be done for a flexible labor market (Rodriguez, 2003, p.37)

runs parallel with the idea that maintains that reforms in job law which should make labor market more flexible in 2003 in Turkey comparing with the high level of unemployment rates. The reason of the ever-growing unemployment in Turkey is the long-lasting economic crisis as an influential factor stimulating unemployment (Kazgan, 2002, p.19).

Years	1995*	1999*	2008**
Unemployment rate %	6.9	7.3	11
Underemployment rate %	6.7	6.9	3,1
Underutilisation rate % (Unemployment + Underemployment)	13.6	14.2	14,1

Source: \* Obtained from 8<sup>th</sup> – Year Development Plan, DPT, p. 102, \*\* Obtained from Turkish Statistical Institute (TÜİK) News Bulletin.

 Table 1: Changes in Unemployment and Underemployment rates in Turkish Labor

 Market (1995-2008) (15+ Age)

As it can be seen from the Table 1, in the period of 2005-2008, as a consequence of effects of the global crisis and economic instability on Turkish economy, while unemployment rate was 6,9 % in 1995, it increased to 7.3% in 1999, and to 11% at the end of 2008. But, in contrast to realized rates of underemployment in 1995 and 1999—6.7% and 6.9%—, it decreased to 3.1% in 2008. Under these conditions, underutilisation rate of work force, which is the sum of unemployment rate plus underemployment rate, increased to 13.6 % and to 14.2 %, in 1995 and 1999 respectively, but in spite of a considerable decrease in 2008, it slightly decreased to 14.1 % at the end of 2008 ( due to increasing unemployment rates).

## 2.2.2.2. The Share of Service Sector in Total Employment

It is stated that there is a linear correlation between flexibility and increasing share of service sector in total employment (Felstead, 1999, p.12). In Turkey, in the sectoral distribution of employment in urban areas, service sector ranks first and it is followed by industry and agriculture sectors. On the other hand, if we look at the long-run expectations of employment in Turkey, it is seen that service sector is leading sector which will create an employment capacity for labour suppliers (ISKUR, 2003, p.13).

According to Household Work Force Survey results, in both 2008 and 2009, considerable part of employment is engaged in service sector. As of 2009, the share of service sector employment in total employment reached to 50 %. The economic crises has led industry sector to provide less employment comparing to the numbers of 2008 (Table 2).

Sectors	2008		2009	
	Employment	Share (%)	Employment	Share (%)
Agriculture	5016	23.7	5254	24.7
Industry	5682	26.8	5379	25.3
Service	10495	49.5	10644	50.0
TOTAL	21194	100	21277	100

Source: <u>http://bulten.tuik.gov.tr/PreHaberBultenleri.do?id=6198&tb\_id=2</u>, 19 April 2010 **Table 2:** Sectoral Distribution of Employment, 2008-2009 (in thousands, 15+ age)

### 2.2.2.3. The Share of Unregistered Employment in Total Employment

Unregistered employment is generally keeping the workers away from awareness of the government, employing unskilled workers, violating the regulations such as minimum age level (child labour), minimum wage, overtime, workplace standards, health and security of workers.

It is generally agreed that, in Turkey, there is an informal economy as well as the informal one and an unregistered employment beside the registered. Today, it is obvious that one of the most challenging problems economies have faced is informal economy and unregistered employment (TUSIAD, 2002, p.96).

In 2009, According to the latest published survey results, the ratio of persons who worked without any social security related to the main job inclined to 42.3 % with 1.5 percentage point increase. The share of persons who did not have any social security in agriculture increased from 84.5 % to 85.8 % and that in non-agriculture increased from 28.6 % to 28.7 % compared to the same period of the previous year (http://www.turkstat.gov.tr/PreHaberBultenleri.do?id=6229, 20 April 2010). By the expansion of types of flexible employment, employment of women, retired, young and handicapped labour force who are considered as secondary labour force have been increased, to participate in economic activities, in work place or at home. Besides that, it is observed that types of flexible employment are accumulated in product lines with low-demand of capital. For example, as a consequence of creating new job opportunities being restricted in Turkey, the labour force as unregistered are employed in product lines which do not require too much capital such as piece-rate wages system in return for producing at home (DPT, 2001a, p.46)

Shifting production out of plant within the context of the organization of production means flexibility in organizing the job and provides an opportunity of reducing the production costs in terms of firm. Henceforth, flexibility in organization is seen by firm as a dominant competition strategy against its rivals (IŞ KUR, 2003, p.35). In this respect, flexibility in production and in employment is an inevitable result of competition and is defined as realization of production out of plant employing outsider workers (TISK, 2004, p.34).

Subcontractor application is another method to shift the production out of plant. The factors bringing about this application are changes in production process, expansion of small and medium-sized firms and the focus on privatization (Ekin, 2002, p.59). Since small and medium sized firms hold a near-position of subcontractor firm, they have a considerable share in total number of firms and in total employment and they emphasize the relationship between informal economy and firm size in Turkey. So, reshaping the subcontractor application within Labor Law carries considerable importance.

Existence of small and medium-sized firms (SMEs) and shifting the production out of plant; are supported with the view of which classifies the capital system as dualist—primary and secondary— in acceptance of flexibility in labor market (Tai, 1994, p.16-17). When taking into consideration that subcontractor application enables firms to offset labor demand and to shift their production line into secondary sector, it would not be false to see the informal economy and subcontractor firms operating in this economy as secondary sector in Turkey. Furthermore, allowing for the operation of private employment agencies within this sector will speed up the tendency of firms towards the sector.

In Turkey, basically, though subcontractor application became widespread in private sector, it also is becoming widespread in public sector. Among the reasons, decreasing the production costs in State Economic Enterprises (KİT), willingness to work with problem-free worker groups and the thought in which easily privatizing the State Economic Enterprises are mentioned. Therefore, subcontracting is described the other way of privatization in public sector (Ekin, 2002, p.35).

On the other hand, it is pointed out that subcontractor application is a key concept in international trade (Liemt, 1997, p.240). When looking at the examples of subcontractor applications in international field, it is observed that 32 percent of employers in excessively industrialized countries such as France, Germany and United Kingdom have shifted their own works to the subcontractors in the last three years and, in Turkey, the number of subcontractor employers and workers in the lines of business accounts for 15% of total labor force (Ekin, 2002, p.34)

### 2.2.2.4. Firm Size in Turkey

Since small-sized firms have a more flexible structure, it possible to construct a relationship between flexibility in labor market and firm size. Firms having a flexible structure, in general, are small and medium sized. Owing to this structural feature, Firms in this size easily respond to changes in demand of goods and services. In this respect, the types of flexible employment as competition strategy are more important for these firms.

According to the EU standards, firms employing 1 to 9 workers are defined as micro enterprise; and those employing 10 to 49 as macro enterprise (Kuruüzüm, 1998, p.37). But in Turkey, there is not a common standard on determining firm size taking number of workers employed as a basis. According to some determination, firms who employ 1 to 49 workers are considered small sized firms (http://www.kosgeb.gov.tr/kos.htm). Firms in this size, have a notably place in Turkish economy. In the same way, the abundance of small-sized firms in number is considered among structural features of Turkish economy (Bulutay, 1995, p.65).

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Size of Work Places (based on the Number of Compulsory Insured Person)	Number of Compulsory Insured Person	Share (%)
1-3 persons	1,228,315	13.8
4-6 persons	855,295	9.6
7-9 persons	613,074	6.9
10-19 persons	1,198,952	13.5
20-29 persons	699,524	7.9
30-49 persons	898,516	10.1
50-99 persons	848,127	9.6
100-499 persons	1,753,236	19.8
500-999 persons	408,122	4.6
1000+ persons	371,805	4.2
TOTAL	8,874,966	100

Source: <u>www.ssk.gov.tr</u>, Insured Person Statistics, January 2010, Table SS15, page 27, **Table 3:** Compulsory Insured Person Numbers According To Activity

Branches and Work Place Size (4/a)

According to Table 3, Firms, who employ 1-49 persons and defined as small sized in Turkey, account for 61 percent of total insured labor force. This founding shows, within the new Labor Law, the importance of arranging the types of flexible employment in terms of labor market in Turkey. Thus, in determining of employers' commitments, firm size is taken as basis and in general small firms have been legally protected (Kuzgun, 2004, p.5-14).

#### 2.2.2.5. Frequency of Cyclical Fluctuation

In terms of firm, providing working hours to become more flexible during economic crises is crucial in relation with minimizing the labor costs. Because an anticipated crisis weakens the firms' adaptation and prevention mechanisms of cyclical fluctuations and threats firms' operational goals, values and predictions regarding sales and returns (Dincer, 1998, p.385).

The economic crises within the context of new Labor Law is accepted being one of the reasons of flexibilizing working hours and is arranged in scope of the article 65 in case of bringing short working in practice. In doing that, it is thought that cyclical and intense fluctuations experiencing in economic activities have been influential on this arrangement (Bulutay, 1995, p.87).

In order to adopt a resolution for short working according to Labor Law, an economic crisis must be a general crises affecting the whole economy. By this approach, in paragraph (3) of article (3) in the act which regulates short working and the payment for short working, an economic crisis is defined as "a situation in which events occurred in national and international economies give shock to the whole economy and establishments" (www.iskur.gov.tr/mydocu/mevzuat /yonetmelik45.html).

A general economic crisis brings about changes in overall economic conditions in terms of firms. In this respect, it is argued that short working provides facilities to firms to cope with crisis and that short working during crisis is a key for feasible solutions in terms of firms (MESS, 1999, p.180).

When analysing the demands for short working to Ministry of Labor and Social Security, as of 30 September 2004, it has seen that the whole demands have been made by firms operating in private sector, and that those firms according to the KOSGEB classification are mostly small and medium-sized (Kuzgun, 2005, p.45-46). According to Arıkboğa (2001), there is a relationship between the number of employees employed and firms' flexible structure and particularly in crisis period, flexibility is a feasible strategy. But, in arrangement of short working, firm size has not been taken a criterion (Kuzgun, 2005, p.47). This policy, regardless of how big firms are, is a result of the opinions to protect firms against economic crisis.

While it has been aimed, by short working, to adjust firm's demand for labor to shrinking in the level of economic activities; the negative effects of employee's income loses caused by implementing of short working has been considered to be compensated by the payment for short working. The main determinant in employee's acquiring the rights of short working is the condition in that premium payment must be paid within the prescribed time limits.

# Conclusion

Today, being connected to globalization, flexibility in labor market is adopted as a new competition strategy in terms of firm. By external and internal factors, the introduction of new regulations into the new Labor Law aiming at flexibilizing labor market has constituted the legal framework in determining firm's competition strategy in Turkey. The importance of new regulation based on numerical flexibility and flexibilizing labor market is vital in respect to determining competition policies.

Labour market flexibility is seen as an important characteristic of a modern economy. Labor market flexibility decribes how labour markets function. A flexible and efficient labour market implies higher employment, and so an economy that is fairer (in terms of, for example, reducing social exclusion), as well as more competitive and more productive. It also implies an economy that is better able to adapt to the changing economic environment. External numerical flexibility refers to the adjustment of the labour intake, or the number of workers from the external market. This can be achieved by employing workers on temporary work or fixed-term contracts or through relaxed hiring and firing regulations or in other words relaxation of Employment Protection Legislation, where employers can hire and fire permanent employees according to the firms' needs. Internal numerical flexibility, sometimes known as *working time flexibility* or temporal flexibility. This flexibility achieved by adjusting working hours or schedules of workers already employed within the firm. This includes <u>part-time</u>, <u>flexi time</u> or flexible working hours/ <u>shifts</u> (including <u>night shifts</u> and <u>weekend shifts</u>), working time accounts, leaves such as <u>parental leave</u>, <u>overtime</u>.

Arranging the both types of flexibility within the new Labor Law enables firms to determine their new competitive strategies. This arrangement, especially in private sector, will lead employment strategies based on the distinction between core and peripheral labor force to be emerged, and also will help this distinction to become common. Besides that, operations of private employment agencies and in general the demand for temporary employee by firms, both, will bring about a new expansion to the competition among rivals and will expand the application of the fixed-termed temporary working contracts. In this context, private employment agencies also will facilitate the applications of numerical flexibility as competition strategy. In the next stage, it is expected that expansion of flexibility would bring about a fragmented and more informal labor market in Turkey.

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# **Economics of Boron Mining in Turkey**

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Abstract: Boron minerals are one of the most important richness of Turkey. Turkey has a great potential in boron minerals regards to the reserves and the quality of these minerals. Boron minerals have an intensive and increasing usage ranging from glass to detergent industry and in metallurgical, agricultural and nuclear applications. Despite the important potential, Turkey gains only an average of 300 million US Dollars per year. Therefore, this income should be increased proportionally to the potential. In this study, production and export of ETIBOR A.S. since 1978, future targets are reviewed.

# Introduction

Boron, which has the world's most common application, is one of the most important elements. This is why the industry is one of the most important foundation stones. Boron minerals are structures in different proportions of boron oxide  $(B_2O_3)$  which are naturally formed. There are over 200 naturally occurring boron containing minerals which have major commercial importance: tincal, colemanite, kernite, ulexite, pandermite, boracite, szaibelyite and hydroboracite (Table 1). Boron minerals in Turkey, which are widely available, are tincal, colemanite and ulexite. These minerals are sodium, calcium and sodium+calcium boron-based compounds. First of these minerals can be physically processed enriched (concentrated boron) can be refined later converted to a variety of boron chemicals (Köse et al., 2002).

Mineral	Chemical composition	% B <sub>2</sub> O <sub>3</sub>	Production Place	
Tincal (natural borax)	Na <sub>2</sub> B <sub>4</sub> O <sub>7</sub> .10H <sub>2</sub> O	36.5	Kırka, Emet, Bigadiç, A.B.D	
Kernite (rasortie)	$Na_2B_4O_7$ .4H <sub>2</sub> O	51.0	Kırka, A.B.D., Argentina	
Ulexite (boronatrocalcite)	NaCaB <sub>5</sub> O <sub>9</sub> .8H <sub>2</sub> O	43.0	Bigadiç, Kırka, Emet, Argentina	
Probertite (kramerite)	NaCaB <sub>3</sub> O <sub>9</sub> .5H <sub>2</sub> O	49.6	Kestelek, Emet, A.B.D	
Colemanite	$Ca_2B_6O_{11}.5H_2O$	50.8	Emet, Bigadiç, Küçükler, A.B.D	
Priceite (pandermite)	$CaB_{10}O_{19}.7H_2O$	49.8	Sultançayır, Bigadiç	
Boracite (stassfurite)	$Mg_3B_7O_{13}Cl$	62.2	Germany	
Szaibelyite (ascharite)	MgBO <sub>2</sub> OH	41.4	B.D.T. (Old S.S.C.B.)	
Hydroboracite	CaMgB <sub>6</sub> O <sub>11</sub> .6H <sub>2</sub> O	50.5	Emet	
Table 1:         Boron mineral which are commercially important [2]				

Boron mineral which are commercially important [2]

Boron is consumed mostly in the form of boron chemicals. Moreover, the concentration of boron can be consumed directly. Boron products are used in many areas including aerospace and aircraft, nuclear applications, military vehicles, fuel, electronics and communications industry, agriculture, glass industry, chemical and detergent industries, ceramic and polymeric materials, nanotechnology, automotive and energy sector, metallurgy and construction. Nearly 75% of boron products are consumed in glass, ceramic, agriculture and detergent industry (Figure 1).



Figure 1. World Boron Consumption in Sectors

The important boron deposits are located in Turkey, USA and Russia. Turkey has 72 percent of world reserves of boron (Table 2).

	Total Reserve	Percent in Total
Turkey <sup>1</sup>	866,000	72
USA <sup>2</sup>	80,000	7
Russia <sup>2</sup>	100,000	8
China <sup>2</sup>	47,000	4
Chile <sup>3</sup>	41,000	3
Bolivia <sup>3</sup>	19,000	2
Peru <sup>2</sup>	22,000	2
Argentina <sup>2</sup>	9,000	1
Serbia <sup>5</sup>	16,200	1
Iran <sup>2</sup>	1,000	0
Kazakhistan <sup>4</sup>	-	-
TOTAL	1,201,200	100

Table 2:

World Boron Reserve ( $x10^3$  Ton -  $B_2O_3$ ) [Boron Sector Report 2009]

- 1. 1. Eti Mine reserves information was used in 2006.
- 2. USGS Mineral Commodity Summariers, January 2009, was taken.
- 3. USGS Mineral Commodity Summariers, January 2002, was taken.
- 4. Satimola region of Kazakhstan on the basis of reserves of 102 million tonnes B<sub>2</sub>O<sub>3</sub> at www.borates.co.uk is given as the other sources are given very different and contradictory figures, these figures reflected in the table. Given this value is 67 percent of ETI shares.
- 5. http://www.riotinto.com/whatweproduce/17056\_inferred\_resource\_at\_jadar\_lithium\_project.asp

The borate deposits known in Turkey are especially located in Eskişehir-Kırka, Balıkesir-Bigadiç, Bursa-Kestelek, and Kütahya-Emet (Figure 2). From two main ores, tincal and colemanite, boron and boron compounds are obtained. The important tincal deposits are in Kırka while the colemanite deposits are around Emet and Bigadiç. Ulexite is located in Bigadiç. Since the boron minerals in Turkey are only run by Eti Mine Works General Management. Eti Mine's operating base consists of five competitive mining operations: Kırka, Emet, Bigadic and Kestelek (Table 3).



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# **Trade of Turkey's Boron Products**

Turkey owns the biggest and highest quality boron reserves in the world. Turkey is the largest boron producer and seller of the world. The entire boron demand in the domestic market is met. The most important countries in the world production of boron are Turkey, USA, Argentina, Russia, China, Chile, Bolivia and Peru. In 2008, global boron production was about 1.91 million tons of  $B_2O_3$ . The production of these countries is given in Table 4 (BOREN web pages, 2010).

Countries	Market ratio (%)
Turkey	42
USA	35
Chile, Argentina, Bolivia and Peru	11
Russia and China	12
Table 4: Position of Turkey in	n World Boron Market

Boron ore in the country is converted to concentrated boron (colemanite, ulexite, Tincal) and refined boron (boric acid, borax pentahydrate and borax decahydrate) products are sold to domestic and foreign markets. Boron concentrate production is done in Emet Kestelek and Bigadiç. Refined boron products are made in Kırka Bandırma and Emet (EMW, 2009).

In Turkey, selling high value-added product (boron chemicals and equivalent) was identified as the main policy. As a result, while reducing the share of exports concentrated boron, increasing constantly share of boron chemicals and equivalent products. In 1998, 53 percent of total sales consisted of the sales of concentrated boron and 47 percent of total sales consisted of from the sales of boron chemicals and equivalent boron (Figure 3).

In 2009, 96 percent of Turkey's total borax products sales revenue consisted of foreign sales. Borax pentahydrate has the highest share in boron chemicals exports. Boric acid is the second coming one. Covering the period 2002-2009 in Turkey concentrated boron and boron chemicals and equivalent products export sales are given in Figure 4 (EMW, 2008).







Figure 4. Turkey Concentrate Boron, Boron Chemicals and Equivalent Products Exports (as the value US\$)

# Conclusions

Boron ore is easily and economically obtained in Turkey. Even the  $B_2O_3$  grade of boron stored in waste dams is higher than the  $B_2O_3$  grade in lake waters of world's locomotive countries. For this reason, high grade and easily mineable boron ores make Turkey an advantageous country.

While the boron market share of Turkey in the world during 1980's was 25% in terms of production, it has been achieved as 37 % in the year 2009.

As Turkey and USA meet the boron demand of the world at a rate of 65-70 %, in the forthcoming years countries like Russia, China, Chile and Argentina have begun to take share in the international boron market. In the year 2009, Turkey has met the need at a rate of 37 % whereas USA met the need at a rate of 28 %. On the other hand, Turkey has sustained its leadership in the past year which it gained back in 2005.

The total sale income of Turkey from boron products in 2009 was achieved as 451 million US\$, 435 million US\$ of which were in the form of export. The sale income of exported boron chemicals and equivalence has increased by 232 % when compared to 2002 and happened as 402 million US\$.

The revenue of world boron market is 1.5 billion US \$ annually. Turkey, which owns 72% of the world boron reserves, get revenue of an average of 300 million US \$. Turkey aims to increase its capacity and profit with the help of new investments.

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# The Effect Of Capital Movements Liberalisation On Economical Development: Boundary Test Approach

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**Abstract:** In this study, liberalization of capital movements' impact on economic growth in Turkey has been investigated by the approach of the bounds testing. According to the empirical findings of study, in both long and short-term, capital movements impact on economic growth is statistically insignificant. This result is far from meeting our theoretical expectations.

Key Words: Turkey, Capital Movement, Libarelization, the Bound Test Approach.

### 1. Introduction

The view about that financial liberalisation would cause much higher economical development has been expressed firstly by Mc Kinnon and Show. According to this view known as Mc Kinnon and Show hypothesis in literature, the maximum rates applied to the deposit rates will cause a decrease in real interest rates in an economy repressed as financially. Considering the possibility of a decrease in real interest rates to the minus degrees in an inflationist atmosphere, the house hold could direct its savings to the unproductive investments like real estate, gold and hard goods instead of financial havings. By limiting the loanable fonds of banking sector, this situation will cause the credits pass to the preferred sectors and firms without being predicted on the objective criteria instead of their expected returns and will prevent the use of sources effectively. If the press on the interest rates is removed, it will be provided to be used the sources in productive areas via trending of savings to the banking sector. As the bank deposit will expand by this, much more credit possibility for investment will occur and economical growth will increase.(Mathieson, 1980; Melo ve Tybout, 1986; Dornbush ve Reynoso, 1989).

In international capital flows mutual profits exist for the countries. As the direction of capital flows is generally from the country that have more capital to the country that have less capital, marginal product of the capital is in higher rates than the country that has the capital. Thus, the capital is directed to more productive and effective fields. In this process that means much more production will happen per capital unit, a welfare increase occurs also in the country giving the capital. (Eichengreen vd., 1998:12; Bacchetta, 1992: 474). When evaluated on this point of view, for the poor countries capital movements liberalisation can be seen as an economic policy that is necessary to use for increasing the investment possibilities and decreasing the capital costs. (Fischer, 1998; Summers, 2000).

By the liberalasation of capital movements the market structure in financial sector changes in the direction of weaking the monopoly power of institutions. As this provides the chance to act in more suitable conditions in credit markets, it causes an increase on realizable real estates and a decrease on borrowing costs. (Kenen, 1976: 31). In this process that means the specializing in the financial services, the increasing specialization causes a development in international economic benefits. (Mathreson ve Suarez, 1992: 41).

However, when the recent developments considered we can see that capital movements gradually act more independently than real ecenomy. While most of the total transations in currency markets consists of short period profit making commercial transations, very little part of this is directed to the commercial activities. This transactions is the main reason for the the weekness in the international currency capital markets. (Verghese, 1985). So in 1980's the foreign capital lost its function in the 1950's and in general it tended to speculative short termed portfolio investments.

In this term portfolio investments contained most parts of the transations in financial markets. Much growth in portfolio investments caused some risks to occur in the economies of the countries firstly by decreasing the real investment possibilities. Especially the possible great fluctuations on the currency rates and financial asset prices resulted in crises by negatively affecting the macroeconomical balance. Since the capital flows occuring as portfolio investments can move fast and in a short time,UNCTAD warns for the possible risks. For instance, the determining factor in capital flows tended to Latin America wasn't economic and since it was shaped according the others' behaviors, it was speculative. In other words, investment owners behaved speculatively instead of behaving according to the economical reasons. This increased the prices of real estates while it made the currency of the country valuable irrationally. With this point of view the Mexican crisis was not a surprise. (Akyüz, 1995: 14).The Ex post point has revealed that some proofs of Ortodox economy is not realist. Today the countries having much financial crisis experience especially find it hard to pay their depts. It is anticipated to apply a program for depts in order not to delay in the system.

In fact Bhagwhati (1998), Rodrik (1998) and Stiglitz (2002), draw attention that capital account liberalisation doesn't improve the growth as it is said; even it may cause crisis. Kaminsky and Reinhart (1999), Detragiache and Demirguc-Kunt(1998) and Glick and Hutchinson also have expressed the similar views (2001) and added that financial liberalisation has a tendency in increasing bank and money crisis. According to UNCTAD (1990), in a system that has no exchange controls, credit allocation can not be directed to the fields to increase the effectivity. Because a banking system based on liberal market is less sensible to the persuasion and sources tend to the short term profits instead of the use for the economical development.

As it is evaluated by the different point of views, it is difficult to say that there is an agreement about the effects of capital movements liberalisations on the econimical growth. Eichengreen and Leblang (2002: 1) point that it can't be estimated weather capital account deficit increases or prevent the growth and in general the proofs are not enough eventhough many researches are made on the subject.

### 2. Data And Methods

This survey covers 1998:01 and 2009:09 variables have been used and all variables have been calculated in percentages. The variable vektör of the survey is:  $y_t = [i_b \ m2_b \ open_t, tk_t] \ y$  stands for Gross National Product (GNP), i stands for Treasury domestic borrowing interest rates, m2, stands for Money supply, open stands for opennes(export+import), tk stands for total capital movement liberalisation All data have been taken from the website of the Central Bank of Republic of Turkey(electronic data delivery system)( http://evds.tcmb.gov.tr).

In this survey boundary test approach which was developed by Pesaran vd.(2001) has been used in order to study the effect of capital movement liberalisation over economic growth. This method is considered to be more usable when comperad to cointegration method developed by Engle-Granger. Series have to be stable in the first differnce in the Engle-Granger and Johansen. Series can be in different stability levels in ARDL method. Another advantage of boundary test approach is that analysis can be made with only a few data. (Narayan and narayan, 2004:25) More over as the regresive variables included in analysis. The level and regressive values of independed veriables can be observed on depended variables. In boundary test apprach firstly whether series move together in long-term is analysized by means of ARDL cointegration method. If there is consisted relationship between series the coefficient and statistic of regression carried out with this series will be meaningfull and reliable. If relationship can be pointed out whit be series lon an short term analysis are held by means of ARDL method.

### **3.** Analysis And Empirical Findings

Before analysis, the certain tests and procedures relation variables used in the study are needed. *tk*, *open* ve *y* series have seasonal effect. Series were purifed from seosanal effect by means of Moving Avarage Methods. Stationary of series were tested with Augmented Dickey Fuller: ADF

# 3.1. ADF Unit Root Test

If time serries is not stable, medyan, variance and covariance changeble in time. Shocks take place in a term can effect the others and it becomes permanent. The analysis carried out in this case includs fake regression and F and t statistics loos their meaning (Gujarati, 1999:2.712).

The stability levels of serries and unitroot test have been studied with ADF test.

DF test is carried out based on three regression equation (Dickey and Fuller, 1979).

Simple situation:

$$\Delta Y_t = \gamma Y_{t-1} + u_t \tag{1}$$

Intercept:

$$\Delta Y_t = \alpha_0 + \gamma Y_{t-1} + u$$

Trend and intercept:

$$\Delta Y_t = \alpha_0 + \alpha_1 t + \gamma Y_{t-1} + u_t \tag{3}$$

As a result of this tests the DF statistic been compared Mac Kinnon critical values zero hypotesis is tested against the Iternative hypotesis. Zero hypotesis showes that serries is not stable alternative hypotesis. If error correction term is autocorrelated equation (3) is regulated as:

(2)

$$\Delta Y = \alpha_0 + \alpha_1 t + \gamma Y_{t-1} + \beta_i \sum_{i=1}^m \Delta Y_{t-i} + u_t$$
(4)

Here m stands for regression length and  $\Delta$  stands for difference operator. Regression number depends on obtaining model without autocorrelation. A test which is carried out this way is called ADF test in short. Tests results obtained accordingly are shown in Table 1.

Table 1: ADF Test Results Expanded for Dickey-Fuller Variables (ADF)

Variables	ADF Test	Critical Values
Y	-1,06[11]	-3,48
$\Delta y$	-7,04[10]	-3,48
İ	-2,14[2]	-3,47
$\Delta i$	-9,86[1]	-3,47
<i>m</i> 2	-6,02[3]	-4,02
open	-3,14[12]	-3,48
∆open	-5,69[10]	-3,48
Tk	-3,07[5]	-3,47
$\Delta tk$	-10,39[4]	-3,47

Note: The values in [] points out teh lag number. By taking the lag lenght which Akaike Lag is the lowest. Mac Kinnon test values pointed out without trend and intercept test values. In this test were used trend and intercept for m2 ve open variables, intecept other variables. For first difference of variables( $\Delta$ ) were used intercept.

#### **3.2.** Co-Integration Test

The level values of many macroeconomic variables are not stable. If there is a co-integration relationship between series in other words if series move together in the long term, a fake regretion trouble will not be faced in an analysis to be carried out with level values(Pesaran etc, 2001:290;Gujarati 1999). However, the dynamic behaviors of variables moving together in the long term cause some deviations in the balance equation(Enders, 1996:151). This is one of the basic characteristic of co-integration variables and plays an important part in the short term dynamic. The dynamic model appearing along with this process is called error correction model(Enders, 1995: 365). An unrestricted error correction model is setup so that boundary test approach can be applied. (unrestricted error correction model: UECM) This model can be applied to our survey as fallows:

$$\Delta y_{t} = \alpha_{0} + \sum_{i=1}^{m} \alpha_{1i} \Delta y_{t-i} + \sum_{i=0}^{m} \alpha_{2i} \Delta i_{t-i} + \sum_{i=0}^{m} \alpha_{3i} \Delta m 2_{t-i} + \sum_{i=0}^{m} \alpha_{4i} \Delta open_{t-i} + \sum_{i=0}^{m} \alpha_{5i} \Delta t k_{t-i} + \alpha_{6} y_{t-1} + \alpha_{7} i_{t-1} + \alpha_{8} m 2_{t-1} + \alpha_{9} open_{t-1} + \alpha_{10} t k_{t-1} + u_{t}$$
(5)

Here, m; stands for optimum lag length,  $\Delta$  stands for difference operator,  $u_t$  stands for error correction term, those which are given with other letter abbreviation stands for the meanings in variable definitions. In this survey

optimum lag lenght has been determined by means of Akaike Criterion. According to Kamas ve Joyce (1993) there musn't be autocorelation between error terms of model's optimum lag length so that the test can give healthy result. If there is autocorolation in the lag lenght which Akaike Criteria lowest. One has to next lag.

The test result of lag lenght are presented in Table 2. Maksimum lag lenght is 2 since the data in this survey is monthly.

m	AIC	LM Test
1	4.86	0,00
2*	4,71	0,66
3	4,77	0,66
4	4,80	0,62
5	4,86	0,12
6	4,86	0,32
7	4,91	0,32
8	4,96	0.51

Table 2: The lag length is point out for boundary test

The optiumum lag length determined as a two in the Table 2. In this lag length hasn't autocorelation. After lag length determined it passed testing process cointegration relationship between variables. In boundary cointegration relationship between values is made by mines of testing ziro hypotesis. (H<sub>0</sub>: $\alpha_4=\alpha_5=\alpha_6=0$ ) Zero hypotesis accept or reject is determinated with F test. Calculate value contrasted Table conpered and contrast min and max value in Pesaran etc. 2001 Table. In the first case if calculated F statistic value lover than min critic value. It is decided that there is coengration relation between series. In the second case if calculated F statistic value in between max and min critice value no definite commend can be made. In this case must be tried alternative coentegration methots. Finally calculated F statistic value bigger than Table max critic it is decided that there is cointegration series.

For testing  $H_0$  calculated F statistic value compared with critic value which taken Pesaran etc 2001 in Table 3. This critic values given fort 4 independed variable and mining full %1.

	k	Calculated F	Alt Sınır	Üst Sınır	st Sınır	
	4	6,46	3,74	5,06		
· ·		1 0 1 1 1	1 011 1 1	1.0 1.1	1 01 (11)	

Note: k stands for variable number. Critical values are extracted from Table CI (iii) in Pesaran etc. **Tablo 3:** Boundary Test Results

It is observed that calculated F statistics is higher than utmost critical value. In this case  $H_0$  hypothesis is denied and it is concluded that there is a co-integration relationship between variables. Since the existence of co-integration relationship between series is remarked, ARDL models started to be estimated to search the long and short term relationships between variables.

#### 3.3 Long Term Analysis

ARDL model which is used in order to analyse long term relations is formulated as:

$$\Delta y_{t} = \alpha_{0} + \sum_{i=1}^{m} \alpha_{1i} y_{t-i} + \sum_{i=0}^{n} \alpha_{2i} i_{t-i} + \sum_{i=0}^{p} \alpha_{3i} m 2_{t-i} + \sum_{i=0}^{r} \alpha_{4i} open_{t-i} + \sum_{i=0}^{k} \alpha_{5i} t k_{t-i} + u_{t}(6)$$

Here m, n, p, r ve k is Lag length and determined with AIC. This transaction has been carried out with the method that Kamas and Joyce(1993) proposed in their causality analyses so as to determine Lag length. Therefore; first of all, regression according to dependent variables' own regressive values is made and the lag length of without

otecorelation model which gives the lowest AIC value. Then, regression models were formed by keeping the identified lag length of the dependent variable stable and all possible regressions of foreign direct investment variable which is the first independent variable and the regressive number of independent variables was found by taking AIC values into consideration. Optimum regression number was obtained by repeating similar transactions for other variables. As a result of the transaction carried out, it was decided that ARDL(7.1.1.0.0) was the long term ARDL model to be estimated and results are presented in Table 4.

	AIC	LM Test		AIC	LM Test	
m			n			
1	5,10	0,00	0	4,65	0,72	
2	5,12	0,00	1*	4,58	0,97	
3	4,75	0,21	2	4,60	0,97	
4	4,76	0,08	3	4,61	0,97	
5	4,78	0,00	4	4,61	0,77	
6	4,78	0,00	5	4,62	0,85	
7*	4,70	0,76	6	4,64	0,84	
8	4,72	0,39	7	4,65	0,84	
			8	4,67	0,44	
p			r			
0	4,60	0,38	0*	4,58	0,62	
1*	4,59	0,47	1	4,59	0,61	
2	4,61	0,39	2	4,60	0,68	
3	4,62	0,38	3	4,61	0,70	
4	4,64	0,33	4	4,62	0,81	
5	4,64	0,37	5	4,63	0,83	
6	4,65	0,24	6	4,64	0,81	
7	4,65	0,97	7	4,66	0,71	
8	4,67	0,97	8	4,67	0,79	
k						
0*	4,59	0,62				
1	4,60	0,49				
2	4,61	0,47				
3	4,62	0,50				
4	4,64	0,47				
5	4,64	0,66				
6	4,65	0,66				
7	4,66	0,57				
8	4,66	0,88				

**Tablo 4:** Determination of Lag Length for Long Term Boundary Test

The estimate results of long term ARDL(7.1.1.0.0) and long term coefficients calculated based on the results mentioned are available in Table 5.

In Table 5; variables of Money supply, opennes and capital movement coefficient's signs accord with our teoric expects.

Variables	Coefficient		t-statistic	
С	0,3481		0,8154	
i	0,0259		3,4533	
m2	0,2049		1,3995	
open	0,0538		2,0456	
tk	0,0005		0,7142	
Diagnosis Tests				
$R^2 = 0.45$		$\chi^2_{BG}$	AB(2) = 0,51(0.60)	
$\overline{R}^2 = 0.39$		$\chi^2_{WDV} = 0,63(0.90)$		
F ist.=7,71(0,00)		$\chi^2_{JBN} = 239,78(0.00)$		
DW=2,00		$\chi^2_{RRMKH}(2)=0,73(0.48)$		

Note: Here,  $\chi^2_{BGAB}$ ,  $\chi^2_{WDV}$ ,  $\chi^2_{JBN}$  and  $\chi^2_{RRMKH}$  are respectively Breusch-Godfrey successive dependence, White changing variance, Jarque-Bera normality test and Ramsey model establishment error statistics in regression. The figures in parentheses reflect p-probability values

Tablo 5: The Results of Calculated Long Term Coefficient of ARDL (7.1.1.0.0) Model

Taking the results in Table 5 into consideration, capital movement and money supply can't be interpreted so that Theirs coefficient is meaningless as regards statistic value. Coefficient of interest variables increased positive unlike our teoric expectations.

#### 3.4 Short Term Analysis

Short term relation between variables again investigated by means of ARDL Error Correction Model based on boundary test approach. ARDL model which is used in order to analyse short term relations is formulated as:

$$\Delta y_{t} = \alpha_{0} + \alpha_{1} E C_{t-1} + \sum_{i=1}^{m} \alpha_{2i} \Delta y_{t-i} + \sum_{i=0}^{n} \alpha_{3i} \Delta i_{t-i} + \sum_{i=0}^{p} \alpha_{4i} \Delta m 2_{t-i} + \sum_{i=0}^{r} \alpha_{5i} \Delta open_{t-i} + \sum_{i=0}^{k} \alpha_{6i} \Delta t k_{t-i} + u_{t}(7)$$

Here  $EC_{t-1}$  is error correction terms and it stands for one term lagged of error terms series which it is obtained from long term relationship. Coefficient for this variable is point out duration of sort term deviation. If this sign of coefficient is negative, deviations happen in short term between series is convergences to long term balance value. If this sign of coefficient is positive, not convergences to long term balance value.

In this model lag length of veriables determineted just like long term. As a result of the transaction carried out, it was decided that ARDL(5.1.0.0.0) was the short term ARDL model to be estimated and results are presented in Table 6.

	AIC	LM Test		AIC	LM Test
m			п		
1	5,29	0,00	0	4,68	0,25
2	4,71	0,05	1*	4,64	0,46
3	4,71	0,07	2	4,65	0,43
4	4,72	0,02	3	4,66	0,35
5*	4,69	0,29	4	4,67	0,36
6	4,70	0,41	5	4,69	0,30
7	4,70	0,36	6	4,70	0,35
8	4,68	0,00	7	4,71	0,39
			8	4,73	0,42
р			r		
0*	4,65	0,52	0*	4,61	0,48
1	4,66	0,44	1	4,62	0,50
2	4,65	0,43	2	4,63	0,60
3	4,69	0,42	3	4,64	0,15
4	4,69	0,48	4	4,65	0,65
5	4,71	0,45	5	4,66	0,66
6	4,69	0,41	6	4,68	0,63
7	4,71	0,31	7	4,68	0,70
8	4,73	0,27	8	4,70	0,67
k					
0*	4,63	0,44			
1	4,64	0,44			
2	4,65	0,47			
3	4,66	0,40			
4	4,67	0,44			
5	4,68	0,43			
6	4,69	0,45			
7	4,68	0,53			
8	4,70	0,34			

**Table 6:** Determination of Lag Length for Short Term Boundary Test

The result of estimated ARDL (5.1.0.0.0) model given in Table 7. Coefficient of  $EC_{t-1}$  (error correction terms) is -0,72 in Table 7. This coefficient is negative and meaningful like expected. If coefficient's signs of error correction terms is negative, model is convergences to long term balance level.

If this sign of coefficient is negative, deviations happen in short term between series is convergences to long term balance value. If this sign of coefficient is positive, not convergences to long term balance value (Narayan ve Smyth 2006). Therefore error correction of model is works. Although capital movements impact on economic growth, like long term effect, is positive and according with theoritical expectation, statistically insignificant.

Variables	Coefficient	t-statistic		
$\Delta y_{t-1}$	-0,3538	-2,0340		
$\Delta y_{t-2}$	-0,3392	-1,8955		
$\Delta y_{t-3}$	0,0961	0,5281		
$\Delta y_{t-4}$	-0,1636	-1,4758		
$\Delta y_{t-5}$	-0,1825	-2,2912		
$\Delta i_t$	-0,0319	-1,9067		
$\Delta i_{t-1}$	0,0509	2,9609		
$\Delta m 2_t$	0,0152	0,1873		
$\Delta open_t$	0,0380	2,5170		
$\Delta t k_t$	0,0002	0,4738		
$ec_{t-1}$	-0,7274	-3,6701		
С	-0,0587	-0,2843		
Diagnosis Tests				
$R^2 = 0,70$	$\chi^2_{BGA}$	$_{B}(2) = 2,56(0,08)$		
$\overline{R}^2 = 0,68$	$\chi^2_{WDV}$	v=0,62(0,89)		
DW=1,98	$\chi^2_{JBN} = 228,78(0,000)$			

Note: Here,  $\chi^2_{BGAB}$ ,  $\chi^2_{WDV}$ ,  $\chi^2_{JBN}$  and  $\chi^2_{RRMKH}$  are respectively Breusch-Godfrey successive dependence, White changing variance, Jarque-Bera normality test and Ramsey model establishment error statistics in regression. The figures in parentheses reflect p-probability values

 $\chi^2_{RRMKH}(2) = 0,13(0,87)$ 

Table 7: The Results of ARDL (5.1.0.0.0) Model

#### Results

F=26,80(0,00)

In this survey, capital movement impact on economic growth in Turkey has been investigated by using monthly datum term of 1998:01-2009:09. In survey, boundary test approach which was developed by Pesaran has been obtained cointegration findings between variables and based on this has been formed long and short term ARDL models

According to obtained ampirical evidence, although in long and short term capital movement impact on economic growth is positive, meaningless as regards statistic value. Therefore Coefficient of capital movement can't be interpreted.

It is determined that opennes and interest variables positive effected on economic growth in the in long term. It is observed that effect of interest one term lagged and opennes on economic growth is positive in short term.

In this study the relation between capital movement liberalisation and economic growth meaningless and this is not according with economic literature.

This may be due to different reasons. Therefore this subject must be with other ampirical studies. So, It is thought that be made open to the outside of the capital account's effect in financial crisis happen Turkey is important.

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# Determining the Districts That can be a Province in Turkey Using Analytic Hierarchy Process

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**Abstract:** It is very important problem objectively determining districts which will become province. It will be appropriate to use AHP to search an efficient solution to this problem. In this study. In this study, AHP is used to determine priority ranking of districts which is eligible to become a province in Turkey. According to the result of this AHP application, Alanya is the most eligible candidate district with 33% importance degree. The following districts based on the ranking are; Bandırma, Fethiye, Elbistan, Ereğli, Bergama, Ödemiş and Erciş.

## Introduction

There are many districts that desire to become a province in Turkey. Districts' desire for becoming a province have been continuing for a long time. This demand is also used for election argument by politicians and political parties before the elections. Some of these districts achieved their wants, and finally became a province. With the rapid development of Turkey, some districts growed much more than some cities. As a result of this growth, these districts have the potential of being a province. However, there are some criterias which districts must have in order to become a province. Factors, such as socio-economic development, population, geographical structures of districts, need to be taken into consideration.

The aim of the study is to compare 10 candidate district which desire to become a province according to the criterias that researchers has determined, and to choose the best candidate based on this comparison by using The Analytic Hierarchy Process.

According to 126. article of The Constitution of the Republic of Turkey 1982, in terms of central administrative structure, Turkey is divided into provinces on the basis of geographical situation and economic conditions, and public service requirements; provinces are further divided into lower levels of administrative districts.

In accordance with the provisions of constitute article, in Province Administration Law 5442 criterias are determined to established provinces while stating that Turkey divided into provinces, provinces divided into districts, and districts divided into sub-districts. But there are not defined criterias about the issue of administrative status change of a place in Turkey. And also status change of provinces, particularly change to provinces, is not mostly

based on the detailed social, economical and demographical researchs. It was based generally on some properties of the places that were made provinces during the years 1989-1999, such as the economical development or undevelopment, geographical positon, the historical background, the migration, the population density, and the security of the place. But like all these and other factors also are valid for the districts<sup>38</sup>.

As there are not clear and obvious laws concerning with establishing new provinces in Turkey, the reasoning of establishing new provinces mostly based on the mentioned Constitution Article, and related articles of Province Administration Law. Since mentioned articles state only three criteria which are on the initiative of the government, it is the role of the government to fill the content of those unclear concepts. Although the desire of the people, geographical position, transportation and security factors generally play very crucial role on establishing provinces in Turkey, some places which come to the position of being a province according to economical situation, and population have forced governments which have voting concerns. Those governments change administrative position of the places mainly based on their political objectives. It is asserted that the use of the demand of becoming a province in recent years as a political pressure and gain on politicians have much more influence on the increasing number of the provinces than the public service requirements in Turkey<sup>39</sup>.

It is very important problem objectively determining districts which will become province. The evaluation of this subject without making it as a domestic political argument, will be easier and more convincing for both political parties and governments. It will be possible to show more fairly, scientifically and objectively behavior with the use of AHP at the solution of this problem.

In the second part of this study, a brief information was given about AHP. In the third part, how the application was implemented, how the data was prepared, how the criterias were determined, and the results of the study were explained and reported.

#### **Analytic Hierarchy Process**

When decision makers face with a multicriteria problem, they decompose it in hieararchic levels acccording to importance of criterias. The decision making process involves developing priorities for alternatives based on the decision maker's judgements and selecting the best alternative that satisfies the objective. One of the techniques used for this process is Analytic Hierarcy Process (AHP) which allows pairwise comparisons.

AHP is widely used as one of the major methods in solving a wide range of problems that involve complex criteria accross different levels where the interaction of criteria is common (Hsu ve Pan, 2009, p. 2311). AHP, developed by Saaty, is a decision aiding method provides a way to rank the alternatives of a problem by deriving priorities (Saaty, Peniwati ve Shang, 2007, s. 1041). It is a very useful tool for multicriteria decision making where the objective is to select the best alternative taken into consideration.

AHP performs pairwise comparisons to measure relative importance of the elements in each level of the hierarchy and evalutes alternatives in the lowest level of the hierarcy in order to make the best decision among multiple candidates (Sipahi and Esen, 2010, p. 300)

In AHP, the hierarchic structure must be built by determining important criterias and subcriterias belonging to each criteria according to the decision maker's objective. First of all, the objective is determined and then the criterias for this objective will be pointed out. After this, alternatives for each criteria will be determined. In this way the hierarchic structure for decision making has been constructed. (Scholl et all., 2005, p.763)

AHP is a mathematical method which considers group's or individual's characteristics, and evaluates quantitative and qualitative variables together in the decision making process (Dağdeviren et all., 2004, p.132). At the same time, it provides more efficient decision making oppurtunities ( Ecer and Dündar, 2008, p. 198). This method has been widely used in solving real life complex decision making problems in recent literature, especially in effectiveness analysis and performance measurement problems (Peters and Zelewski, 2008, p.1040).

<sup>&</sup>lt;sup>38</sup> Gökçen KILINÇ, Yeni İl Kurulması ve Siyaset, <u>http://www.istanbulburda.com/haber\_author.php?id=1967</u>; Gökçen KILINÇ ve Nuran ZEREN GÜLERSOY, "Türkiye'deki İlçelerin Kentleşme Derecelerine Göre İl Olma Potansiyellerinin Değerlendirilmesi", İTÜ Dergisi, Cilt 6, Sayı 1, Mart 2007, s.72.

<sup>&</sup>lt;sup>39</sup> Selçuk YALÇINDAĞ, "Yönetsel Etkililik, Demokrasi ve İl Sayısının Artırılması", Amme İdaresi Dergisi, Cilt 30, Sayı 1, 1997, s.12; Yasin SEZER, "Merkezi Yönetimin İl ve Bölge Ölçeğinde Örgütlenmesi", İktisadi ve İdari Bilimler Fakültesi Dergisi, C.I, S.I, Afyon, 1999, s.205.; Yasin SEZER, "Kamu Yönetimi Temel Kanunu Tasarısı Çerçevesinde İl Genel Yönetimi Hakkında Bir İnceleme", (Ed.), Nagehan Arslan, <u>Türkiye'de Kamu Yönetimi Sorunları Üzerine İncelemeler, Şeçkin Yayın</u>ları, Ankara, 2005, s.22.

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The AHP approach was developed in the early 1970s in response to military contingency planning, scarce resources allocation, and the need for political participation in disarmament agreements (Yang and Shi, 2002, p. 30). AHP is not only a decision making method that decomposes a complex multi-criteria decision problem into a hierarchy but also a measurement theory that prioritizes the hierarchy and consistency of the judgmental data provided by a group of decision makers agreements (Hsu ve Chen, 2008, p. 46)

The use of AHP in order to solve a decision making problem involves the following steps (Al-Harbi, 2001, p. 20):

- 1. Define the decision making problem and determine its goal.
- 2. Structure the hierarchy from the top (the objectives from a decision-maker's point of view) through the intermediate levels (criteria on which subsequent levels depend) to the lowest level which usually contains the list of alternatives.
- 3. Construct a set of pair-wise comparison matrices (n x n square matrix) for each of the lower levels with one matrix for each element in the level immediately above by using the relative scale measurement shown in Table 1 The pair-wise comparisons are done in terms of of which element dominates the other.
- 4. The number of judgements equals to n(n-1)/2. Judgements required to develop the set of matrices which should be both transitive and reciprocal in step 3.
- 5. Hierarchical synthesis is now used to weight the eigenvectors by the weights of the criteria and the sum is taken over all weighted eigenvector entries corresponding to those in the next lower level of the hierarchy.
- 6. Having made all the pair-wise comparisons, the consistency is determined by using the eigenvalue,  $\lambda_{max}$ , to calculate the consistency index, CI as follows:

 $CI = (\lambda_{max} - n)/(n-1)$ , where n is the matrix size. Judgement consistency can be checked by taking the consistency ratio (CR) of CI with the appropriate value in Table 2. The (CR) is acceptable if it is less than 0.10. Otherwise the the judgement matrix is inconsistent. To obtain a consistent, judgements should be reviewed and improved.

7. Steps 3-6 are performed for all levels in the hierarchy.

Intensity of Importance	Definition	Explanation	
1	Equal Importance	Two activities contribute equally to the objective	
3	Moderate İmportance	Experience and judgment slightly favor one activity over another	
5	Strong importance	Experience and judgment strongly favor one activity over another	
7	Very strong or demonstrated importance	An activity is favored very strongly over another; its dominance demonstrated in practice	
9	Extreme importance	The evidence favoring one activity over another is of the highest possible order of affirmation	
2,4,6,8	Intermediate values when compromise is needed		

Table 1: The Fundamental Scale of Absolute Numbers (Saaty, 2008, p. 125)

n	1	2	3	4	5	6	7	8	9	10
Average random	0	0	0.52	0.89	1.11	1.25	1.35	1.40	1.45	1.49
index										

Table 2: Random Consistency Index (Saaty, Vargas and Dellmann, 2003, p. 174)

## The Study

People have troubles while making decisions about any issue in the time of they living. Contradictory results may also appear on the decisions about same issue made by people. The most important reason of for this is the intention of selecting best decisions over the alternatives. Same situation is also valid for the decisions taken by the government. Since the government must make the best decision for its public. Because of demand of individuals that live in the country about changing their districts in which they live to provinces, one of the most important decisions is which districts will become province. At this time, this decision is very important as it burden additional expenses to the budget.

In this study, AHP is used to determine priority ranking of districts which is eligible to become a province in Turkey. Candidate districts are determined by preselection with this application. Above mentioned criterias are taken into consideration for preselection:

- Population of the center must be greater than 50 000,
- Population of district must be greater than 100 000,
- Distance from the province must be greater than 100 km.

Values of above mentioned criteria for each of the candidate districts determined by preselection, are obtained from municipality's and governer's official websites and shown in Table 3.

CRITERIAS	ALANYA	BANDIRMA	BERGAMA	FETHİYE	ERCİŞ	EREĞLİ	ELBİSTAN	ÖDEMİŞ
DISTANCE (KM)*	138	100	102	124	103	153	158	113
CENTER POPULATION**	134056	113851	58570	72003	74858	95056	85642	73310
DISTRICT'S POPULATION**	241451	132077	100802	183184	158795	135008	135386	129260
SURFACE AREA(KM <sup>2</sup> )	1827	690	1688	3055	2115	2260	2546	1082
NUMBER OF VILLAGES	3	0	0	3	3	0	0	2
NUMBER OF CONNECTED DISTRICTS	5	4	7	3	3	3	7	6
CON.TOTAL POPULATION.**	152649	208340	332353	95653	238131	63563	238450	312937
TEMPORARY POPULATION****	1377146	74548	21186	252726	3440	9500	5934	2935
REAL WAGE***	558996	706831	84714	123754	21024	83628	91169	85191

**Table 3:** Quantitative values of criterias for each of the districts

\*<u>http://www.kgm.gov.tr/Sayfalar/KGM/SiteTr/Uzakliklar/ililcelerArasiMesafe.aspx</u>

\*\* http://tuikapp.tuik.gov.tr/adnksdagitapp/adnks.zul

\*\*\* http://ekutup.dpt.gov.tr/bolgesel/gosterge/2004/ilce.pdf

\*\*\*\* http://www.turizm.gov.tr

DISTRICTS	DISTANCE	NORMALIZED VALUE OF DISTANCE
ALANYA	138,0000	0,1393
BANDIRMA	100,0000	0,1009
BERGAMA	102,0000	0,1029
ELBİSTAN	158,0000	0,1594*
ERCİŞ	103,0000	0,1039
EREĞLİ	153,0000	0,1544
FETHİYE	124,0000	0,1251
ÖDEMİŞ	113,0000	0,1140
TOTAL	991,0000	1,0000

 Table 4: Distance Criteria

According to distance criteria most appropriate district to become a city is Elbistan with approximately %16. Bandırma district is in the last rank with % 10.

DISTRICTS	CENTER'S	CENTER'S POPULATION NORMALIZED VALUE
	POPULATION	
ALANYA	134056,000	0,1895*
BANDIRMA	113851,000	0,1610
BERGAMA	58570,000	0,0828
ELBİSTAN	85642,000	0,1211
ERCİŞ	74858,000	0,1058
EREĞLİ	95056,000	0,1344
FETHİYE	72003,000	0,1018
ÖDEMİŞ	73310,000	0,1036
TOTAL	707346,000	1,0000

 Table 5:
 Center's Population Criteria

Alanya district is in the first rank with %19 accoding to the center's population criteria and Bergama is the last with %8.

DISTRICTS	DISTRICT'S	NORMALIZED VALUE OF DISTRICT'S POPULATION
	POPULATION	
ALANYA	241451,000	0,1986*
BANDIRMA	132077,000	0,1086
BERGAMA	100802,000	0,0829
ELBİSTAN	135386,000	0,1113
ERCİŞ	158795,000	0,1306
EREĞLİ	135008,000	0,1110
FETHİYE	183184,000	0,1506
ÖDEMİŞ	129260,000	0,1063
TOTAL	1215963,000	1,0000

### Table 6: District's Population Criteria

For district's population criteria the most important district is Alanya and the least is Bergama.

DISTRICTS	SURFACE AREA	NORMALIZED VALUE OF SURFACE AREA
ALANYA	1827,000	0,1197
BANDIRMA	690,000	0,0452
BERGAMA	1688,000	0,1106
ELBİSTAN	2546,000	0,1668
ERCİŞ	2115,000	0,1386
EREĞLİ	2260,000	0,1481
FETHİYE	3055,000	0,2002*
ÖDEMİŞ	1082,000	0,0709
TOTAL	15263,000	1,0000

## Table 7: Surface Area Criteria

According to surface area criteria most appropriate district to become a city is Fethiye with approximately %20. Bandırma district is in the last rank with % 4.

DISTRICTS	NUMBER OF	NORMALIZED VALUE OF VILLAGE NUMBERS
ΔΙΔΝΥΔ	VILLAGES 3.000	0.2727*
ALANIA	5,000	0,2727
BANDIRMA	0,000	0,0000
BERGAMA	0,000	0,0000
ELBİSTAN	0,000	0,0000
ERCİŞ	3,000	0,2727*
EREĞLİ	0,000	0,0000
FETHİYE	3,000	0,2727*
ÖDEMİŞ	2,000	0,1818
TOTAL	11,000	1,0000

Table 8: Number of Villages Criteria

Alanya, Fethiye and Erciş districts together are in the first rank with %27 accoding to the number of villages criteria.

DISTRICTS	NUMBER OF	NORMALİZED VALUE OF NUMBER OF DISTRICTS TO
	DISTRICTS TO BE	BE CONNECTED
	CONNECTED	
ALANYA	5,000	0,1316
BANDIRMA	4,000	0,1053
BERGAMA	7,000	0,1842*
ELBİSTAN	7,000	0,1842*
ERCİŞ	3,000	0,0789
EREĞLİ	3,000	0,0789
FETHİYE	3,000	0,0789
ÖDEMİŞ	6,000	0,1579
TOTAL	38,000	1,0000

### **Table 9:** Number of Districts to be Connected Criteria

According to this criteria, Bergama and Elbistan have the highest importance percentage with approximately %18.

DISTRICTS	CONNECTED TOTAL POPULATION	NORMALIZED VALUE OF CONNECTED TOTAL POLULATION
ALANYA	152649.000	0.0930
BANDIRMA	208340.000	0.1269
BERGAMA	332353.000	0 2024*
DERGINAR	332333,000	0,2021
ELBİSTAN	238450,000	0,1452
ERCİŞ	238131,000	0,1450
EREĞLİ	63563,000	0,0387
FETHİYE	95653,000	0,0583
ÖDEMİŞ	312937,000	0,1906
TOTAL	1642076,000	1,0000

### Table 10: Connected Total Population Criteria

According to connected total population criteria, Bergama has the highest importance percentage with approximately %20 and the last is Ereğli.

DISTRICTS	TEMPORARY	NORMALIZED VALUE OF TEMPORARY POPULATION
	POPULATION	
ALANYA	1377146,000	0,7926*
BANDIRMA	64548,000	0,0372
BERGAMA	21186,000	0,0122
ELBİSTAN	5934,000	0,0034
ERCİŞ	3440,000	0,0020
EREĞLİ	9500,000	0,0055
FETHİYE	252726,000	0,1455
ÖDEMİŞ	2935,000	0,0017
TOTAL	1737415,000	1,0000

## **Table 11:** Temporary Population Criteria

According to the temporary population criteria, the most eligible candidate is Alanya with % 79 and the last is Ödemiş.

DISTRICTS	REAL WAGE	NORMALIZED VALUE OF REAL WAGE
ALANYA	558,9960	0,3185
BANDIRMA	706,8310	0,4027*
BERGAMA	84,7140	0,0483
ELBİSTAN	91,1690	0,0519
ERCİŞ	21,0240	0,0120
EREĞLİ	83,6280	0,0476
FETHİYE	123,7540	0,0705
ÖDEMİŞ	85,1910	0,0485
TOTAL	1755,3070	1,0000

 Table 12:Real Wage Criteria

According to real wage criteria, Bandırma has the highest importance percentage with approximately %40, Alanya is in the second rank with %32 and the last is Erciş.

GENERAL	DISTANCE	CENTER'S POPULATION	DISTRICT'S POPULATION	SURFACE AREA	NUMBER OF VILLAGES	NUMBER OF DISTRICT'S TO BE CON	TOTAL POPULATION TO BE CON.	TEMPORARY POPULATION	REAL WAGE
DISTANCE	1,0000	0,3333	0,5000	1,0000	0,5000	0,5000	0,3333	0,2500	0,1429
CENTER'S POPULATION	3,0000	1,0000	2,0000	4,0000	3,0000	3,0000	2,0000	0,3333	0,2000
DISTRICT'S POPULATION	2,0000	0,5000	1,0000	3,0000	2,0000	2,0000	1,0000	0,3333	0,2000
SURFACE AREA	1,0000	0,2500	0,3333	1,0000	0,3333	0,3333	0,2500	0,2500	0,1429
NUMBER OF VILLAGES	2,0000	0,3333	0,5000	3,0000	1,0000	1,0000	0,3333	0,3333	0,1667
NUMBER OF DISTRICT'S TO BE CONN.	2,0000	0,3333	0,5000	3,0000	1,0000	1,0000	0,3333	0,2500	0,2000
TOTAL POPULATION TO BE CON.	3,0000	0,5000	1,0000	4,0000	3,0000	3,0000	1,0000	0,5000	0,2500
TEMPORARY POPULATION	4,0000	3,0000	3,0000	4,0000	3,0000	4,0000	2,0000	1,0000	0,2500
REAL WAGE	7,0000	5,0000	5,0000	7,0000	6,0000	5,0000	4,0000	4,0000	1,0000
Total	25,0000	11,2500	13,8333	30,0000	19,8333	19,8333	11,2500	7,2500	2,5524

 Table 13: Pair-wise Comparison Matrix of Criterias

These values are obtained from expert view of a vice governer.

Consistency Ratio (CR) is acceptable if CR is less than 0,10. Otherwise the judgements of the decision maker are inconsistent.

T1	Weights
Distance	0,0344
Center's Population	0,1213
District's Population	0,0791
Surface Area	0,0295
Number of Villages	0,0542
Number of Districts to be connected	0,0543
Connected Total Population	0,1032
Temporary Population	0,1715
Real Wage	0,3525

### Table 14: Weights of criterias

After calculating weights for criterias, it is come to stage of solving decision problem, in other words last stage of the AHP. At this stage, a matrix consists of calculated relative priority values (table 14) was created and then by multiplying with Matrix of Weighted Criteria (Table 16), Decision Matrix (Table 17)was created.

			Т	able 15:Fina	al Table				
Distance	Center's	District's	Surface	Number	Number	Total	Temporary	Real	Weight
	Population	Population	area	of	of	Population	Population	Wages	Points
				villages	Districs	to be			
					to be	conn.			
					conn.				
0,1393	0,1895	0,1986	0,1197	0,2727	0,1316	0,093	0,7926	0,3185	0,0344
0,1009	0,161	0,1086	0,0452	0	0,1053	0,1269	0,0372	0,4027	0,1213
0,1029	0,0828	0,0829	0,1106	0	0,1842	0,2024	0,0122	0,0483	0,0791
0,1594	0,1211	0,1113	0,1668	0	0,1842	0,1452	0,0034	0,0519	0,0295
0,1039	0,1058	0,1306	0,1386	0,2727	0,0789	0,145	0,002	0,012	0,0542
0,1544	0,1344	0,111	0,1481	0	0,0789	0,0387	0,0055	0,0476	0,0543
0,1251	0,1018	0,1506	0,2002	0,2727	0,0789	0,0583	0,1455	0,0705	0,1032
0,114	0,1036	0,1063	0,0709	0,1818	0,1579	0,1906	0,0017	0,0485	0,1715
								)	0,3525
				~ _					
				$\checkmark$				,	
•			S <sub>ij</sub>		Х		Т		$\neg \gamma$

Eligibility ranking for becoming a	Districts	Coefficients
province		
1	Alanya	% 33
2	Bandırma	% 18
3	Fethiye	% 11
4	Ödemiş	% 8
5	Elbistan	% 8
6	Bergama	% 7
7	Erciş	% 7
8	Ereğli	% 6

 Table 16: Order of Preference

### **Results**

AHP is a mathematical method, which evaluates quantitative and qualitative variables together in the solution of decision problems and enables efficient decision making. This method has been widely used in solving real life complex decision making problems in recent literature, especially in effectiveness analysis and performance measurement problems.

It is an important problem to determine the districts which are eligible to become province. To handle this issue without makig it a domestic politics material will be more easy and persuasive for both of the political parties and goverments. More fair, scientific and objective attitude can be possible by using AHP in the solution of this problem. Therefore in this study, AHP is used to determine priority ranking of districts which are eligible to become a province in Turkey. According to the result of this AHP application, Alanya is the most eligible district with %33 importance degree and Bandırma is in the second place with a 15 point difference. Fethiye has the third rank and Ödemiş has the forth rank.

## Suggestions

It is shown with this study that AHP method can be applicable to determine the priority ranking of districts to become province. When new provinces are in agenda, more current data and criterias must be used in a Project with Ministry of Interriors and other relevant governmental institutions in order to help political authorithy on decision making about this subject.

2<sup>nd</sup> International Symposium on Sustainable Development, June 8-9 2010, Sarajevo

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# The Determination of University Selection Based Upon Analytic Hierarchy Process

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**Abstract:** The most important factor in career planning of a person is to direct him depending upon his features. The best way of choosing career is to compare the wishes of a person with the requirements of that career so that he can decide the best one. Particularly, those who think to have a university education for their careers come across difficulties while deciding on their career path on account of the fact that the global world can offer various opportunities for education in a great many places. The student must choose by taking into account some criteria. As an example, several factors play a crucial role in this process such as the academic success of the university, the working opportunities provided, the distance of the university to the hometown of the student, the economic status of that city, the facilities of accommodation. Considering all these factors, the student should give an optimal decision. In this context, the common decision including both the personal different opinions and convincing for all is strongly needed. AHP (Analytic Hierarchy Process) has gained a very big momentum at these kind of situations.

### Introduction

The key to help to a student in the process of career planning is to give him an encouragement that will have an impact in the future for the career planning activities (Laker & Laker, 2007, p.138). The fact to be known about career is that the person is responsible for the career development himself (Walker & Levesque, 2006, p.28). The reason is that in terms of career development and management in the literature, much has been emphasized personally gained and experienced career instead of organization based career development .( Kidd & Green, 2006, p.229). The person in the personal planning stage while choosing his career, he has been affected by a number of factors. The best career choice is, to reach the best by comparing what he wants and what he needs. The matter is to decide upon the best among the alternatives and upon the methods by which the decisions will be taken.

The selection of the department in high schools until the university exam, even the selection of the type of the high schools and the private courses for the preparation of the university exam is determined by the selections following the decisions. The selection of the university after high school is particularly significant for the students who are at the beginning of their careers. In this term, the students are a little bit confused due to the efforts to choose the best among a number of alternatives. In this case, the most important moment for decision is to choose the best alternative of the university.

The student is supposed to choose by taking into account some criteria such as the academic achievement of the university, the chance of the graduates in having jobs, the distance of the university to the homeland, the economic status and the opportunities for accommodation of the city. Considering all these factors, the student should give an optimal decision. By means of this, throughout undergraduate study, some of the regrets should be prevented and motivation and concentration should be used for the productivity and the efficiency of the education. In this case, a common decision is needed by means of which both the differences of personal opinions can be assessed and everyone can be persuaded at the same time.

From this perspective, AHP is a mathematical method which lays emphasis on the features of a person as well as group, and which assesses both the qualitative and quantitative variables together (Dağdeviren et al., 2004, p.132). At the same time, it provides opportunity for deciding effectively in the solution of decisional problems (Dündar & Ecer, 2008, p.198). AHP enables to modeling in a hierarchical way showing the relationship between

decision makers with complex problems, the ultimate goal of the problem, criteria, sub criteria, and the alternatives (Kuruüzüm & Atsan, 2001, p.84). Recently, this problem has captured attention a lot, and it is used in the solution of decision making problems in real life. Particularly, in the efficiency analysis, in the productivity analysis, and in the problems of performance assessment, the AHP is seen to be widely used.

## The Determination of University Selection

There are many application processes all around the world in the higher education system. Recruitment structures and college admissions vary widely from country to country. For example, mostly, all British higher education institutions are members of the UCAS, therefore, nearly all those wishing to study for their first degrees in the UK have to apply through the UCAS. In the USA, students apply to one or more colleges or universities by submitting an application which each college evaluates according to its own criteria. For the graduate education, virtually all graduate programs require applicants to submit scores on standardized tests. In Turkey the Student Selection and Placement Center (ÖSYM) prepares the centralized University Entrance Examination (Yamamato, 2006, p.59).

In addition to the differences of the applications depending upon the countries, there are also some differences in the selection of the university of a student. In occurrence of these differences, the impacts of the opportunities are effective. While some of the universities bring forth the the quality of their education, the others mention about the technological facilities. At the same time, some of the universities are boastful about the employed students, but the others are important for their social opportunities in the campus. The students on the verge of choosing the university will be affected from all these differences and will need to search the reality of these opportunities and they will focus on the criteria and the factors determined well in advance. These factors and the criteria become more clear after collecting informations from many sources about the universities (Veloutsou et al., 2005, p.281). The location of the the university, local social life and campus, the future career prospects and opportunities, financial considerations, the quality of education, the institutions' infrastructure, job prospects, personal motives have impacts on selection (Keskinen et al., 2008, p.639-640; Soutar & Tourner, 2002, p.40-41; Veloutsou et al., 2005, p.161-162)

## **The Analytic Hierarchy Process**

The Analytic Hierarchy Process is decision-making process that breaks complex problems down into levels of decision criteria that can be managed more readily. The AHP synthesizes information and evaluates decision criteria in a way that enables the use of both real data and qualitative evaluations of factors in one model (Liu et al., 2008, p. 437). As Saaty mentions that it also organizes the basic rationality by breaking down a problem into its smaller constituent parts and then guides decision makers through a serious of pairwise comparison judgments to express relative strength or intensity of impact of the elements (Varma et al., 2008, p. 346).

The AHP method can support managers in a broad range of decisions and complex problems including supplier-selection decisions, facility-location decisions, forecasting, risks and oppurtunities modeling, choice of technology, plan and product design, and so on. Further more the AHP approach also shows some interesting advantages (Costa & Evangelista, 2008, p.71):

- Effectiveness also in presence of descriptive and evaluative lacks;
- Effectiveness when there is a co-presence of qualitive and quantitive;
- It overcomes the diffuculty of the evaluation of decisional factors;
- Control of the answers consistency and the final results coherence;
- Possibility to focus on every aspect of the problem always going down to a greater level of detail and stratifying the analysis; and
- Dynamism and adaptability of the method

The calculation procedure of AHP is presented below (Hsu and Chen, 2008, p. 46):

Establishment of pair-wise comparision matrix A. Let C1,C2,C3,....,Cn be the set of criteria, while aij represents a quantified judgement on a pair of criteria Ci, Cj. The relative importance of two criteria is rated using a scale with the digits 1, 3, 5, 7 and 9, where 1 denotes "equally important", 3 for "slightly more important", 5 for "strongly more important", 7 for "demonstrably more important" and 9 for "absolutely more important". The digits 2, 4, 6 and 8 areare used to facilitate a compromise between slightly differing judgments. A n-by-n matrix A is derived as fallows

$$A = \begin{bmatrix} a_{11} & a_{12} & \dots & aj \\ a_{21} & a_{22} & \dots & aj \\ \vdots & & & \vdots \\ \vdots & & & \ddots \\ \vdots & & & \ddots \\ a_{i1} & a_{i2} & \dots & a_{ij} \end{bmatrix}$$
(1)

Where aij = 1 and aji = 1/aij,  $i, j = 1, 2, \dots, n$ .

In matrix A, the problem involves assigning a set of numerical weights W1, W2, W3, .....Wn to the n criteria C1, C2, C3, .....Cn that "reflects the recorder judgments". If A is a consistency matrix, the relations between weights Wi and judgments aij are simply given by Wi / Wj = aij (for i, j = 1, 2, 3, .....n)

Eigenvalue and eigen vector. Saaty suggested that the largest eigenvalue  $\lambda max$ 

If A is a consistency matrix then eigen vector X can be calculated by the equation (2):

$$(A - \lambda maxI) X = 0$$

Consistency test. Saaaty proposed utilizing consistency index (CI) and consistency ratio (CR) to verify the consistency of the comparison matrix. Additionally, CI and CR are defined as fallows:

$$CI = (\lambda max - n) / (n - 1)$$

$$CR = CI / RI$$
(3)
(4)

(2)

Where RI denotes the average consistency index over numerous random entries of same order reciprocal matrices. If  $CR \le 0,1$  the estimate is accepted; otherwise, a new comparison matrix is solicited until  $CR \le 0,1$ .

### The Study

Imagine that any high school graduate student determined some of the criteria about the university planned by means of the decision either collectively or individually. These criteria are such as the image and the prestige of the university, the knowledge in education and the technological opportunities, the career opportunities, the possibility of employment of the university graduates, the atmosphere of the campus and the social life, the opportunities for accommodation, and transportation, yet still, let's consider that the student gives more paramount importance to the five of them more than the others. Let's say these are the criteria like "the image and the prestige of the university", "the knowledge in education and the technological opportunities", "the career opportunities in the university", "the possibility of employment of the university graduates", "the atmosphere of the campus and the social life". The university alternatives and the results of these alternative universities out of 100 point in terms of the criteria are shown below in Table 1:

	<b>1. UNIV.</b>	2. UNIV.	<b>3. UNIV.</b>	<b>4. UNIV.</b>	<b>5. UNIV.</b>
IMAGE-PRESTIGE	80	100	70	60	90
KNOWLEDGE-TECH.	90	70	80	100	80
CAREER	50	80	90	60	70
EMPLOYMENT	70	70	60	60	80
CAMPUS	60	60	100	90	90

Table 1

In this stage of the application, initially, the comparison of the criteria was done in accordance with the method of AHP and indicated in Table 2. In the process of the determination of the level of importance, the opinion of the student and the environment left impacts, and comparisons were made depending upon these opinions.

	I-P	K-T	CAR	EMP	САМ
I-P	1	1/2	3	1/3	5
К-Т	2	1	2	1/4	4
CAR	1/3	1/2	1	1/5	3
EMP	3	4	5	1	7
CAM	1/5	1/4	1/3	1/7	1

Table 2

$$A = \begin{bmatrix} 1 & 1/2 & 3 & 1/3 & 5 \\ 2 & 1 & 2 & 1/4 & 4 \\ 1/3 & 1/2 & 1 & 1/5 & 3 \\ 3 & 4 & 5 & 1 & 7 \\ 1/5 & 1/4 & 1/3 & 1/7 & 1 \end{bmatrix} \qquad W = \begin{bmatrix} 0.184 \\ 0.195 \\ 0.094 \\ 0.481 \\ 0.044 \end{bmatrix}$$

#### The Consistency Ratio of Matris A = 0.0545

The calculated vector in the column W shows values of numerical importance. In the framework of these results, the most important criteria with the percentage of 48 % is "employment" whereas the least criteria is "the atmosphere of campus" with the percentage of 5 %. In the Table 3 below, the criteria's values of importance in percentage are given sequently.

The Sequence of	The Assessment Criterium	Approximate Values of				
1	Employment	% 48				
2	Knowledge-Technology	% 20				
3	Image-Prestige	% 18				
4	Career	% 9				
5	Campus	% 5				

#### Table 3

The formula used while finding W is, at the same time, used to compare and contrast the criteria of all the candidates with one another. In this context, the stages of finding out matrix C such as C1, C2, C3, C4, and C5 in the results of all the contrasts in every criterium is in the following:

	1. UNIV.	2. UNIV.	3. UNIV.	4. UNIV.	5. UNIV.
1.UNIV.	1	1/5	3	5	1/3
2. UNIV.	5	1	7	9	3
3. UNIV.	1/3	1/7	1	3	1/5
4. UNIV.	1/5	1/9	1/3	1	1/7
5. UNIV.	3	1/3	5	7	1

	[1	1/5	3	5	1/3		0.134
	5	1	7	9	3		0.502
¥ 74	1/3	1/7	1	3	1/5	$C^{1}$	0.067
VI =	1/5	1/9	1/3	1	1/7	C1=	0.034
	3	1/3	5	7	1		0.260

The Consistency Ratio of Matris C1= 0.0541

The Comparison of the University in terms of "Image and Prestige"

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	1. UNIV.	2. UNIV.	3. UNIV.	4. UNIV.	<b>5. UNIV.</b>
1. UNIV.	1	5	3	1/3	3
2. UNIV.	1/5	1	1/3	1/7	1/3
3. UNIV.	1/3	3	1	1/5	1
4. UNIV.	3	7	5	1	5
5. UNIV.	1/3	3	1	1/5	1

Assessing from the perspective of "Image and Prestige", it can be stated that the university in the second order is much more preferable with the percentage of 50.2 %.

	[ 1	5	3	1/3	3 ]	[ (	0.245]
	1/5	1	1/3	1/7	1/3	(	0.046
W2	1/3	3	1	1/5	4	$C^{2}$	0.105
$V \angle =$	3	7	5	1	5	C 2 =	0.497
	1/3	3	1	1/5	1		0.105

### The Consistency Ratio of Matris C2= 0.0284

The Comparison of the University in terms of "Knowledge and Technological Opportunities"

As for the criteria of "Knowledge and Technological Opportunities", the university in fourth order is leading the others with the percentage of 49.7 %.

	1. UNI.		<b>2.</b> U	INI.		3. UNI.	<b>4.</b> U	NI.	5. UNI.
1. UNI.	1		1/7			1/9	1/3		1/5
2. UNI.	7		1			1/3	5		3
3. UNI.	9		3			1	7		5
4. UNI.	3		1/5			1/7	1		1/3
5. UNI.	5		1/3			1/5	3		1
		[ 1	1/7	1/9	1/3	1/5		0.034	
		7	1	1/3	5	3		0.260	
	1/2	9	3	1	7	5	<u>C</u> 3 –	0.502	
	v 3 =	3	1/5	1/7	1	1/3	05-	0.067	
		5	1/3	1/5	3	1		0.134	

The Comparison of the University in terms of "The Opportunites of Career in the University"

### The Consistency Ratio of Matris C3= 0.0541

According to the criterium of "The Career Opportunities in the University" the university in the third order is in a better state with the percentage of 50.2 %.

The Comparison of the University in terms of "The Possibility of the Graduate Employment
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	1. UNI.	2. UNI.	3. UNI.	4. UNI.	5. UNI.
1. UNI.	1	1	3	3	1/3
2. UNI.	1	1	3	3	1/3
3. UNI.	1/3	1/3	1	1	1/5
4. UNI.	1/3	1/3	1	1	1/5
5. UNI.	3	3	5	5	1

	[1]	1	3	3 1/3		0.195
	1	1	3	3 1/3		0.195
174	1/3	1/3	1	1 1/5	$C_{4}$ –	0.073
<i>v</i> 4 =	1/3	1/3	1	1 1/5	C4-	0.073
	3	3	5	5 1		0.462
				_		

#### The Consistency Ratio of Matris C4= 0.012

The university in the fifth order is much more successful in the criterium of "The Possibility of Graduate Employment" with the percentage of 46.2 %. The Comparison of the University according to the criteria of "The Atmosphere of Campus and Social Life"

The comparison of the oniversity according to the criteria of The Atmosphere of Campus and Social Ene								
	1. UNIV.	2. UNIV.	3. UNIV.	4. UNIV.	<b>5. UNIV.</b>			
1. UNIV.	1	1	1/9	1/7	1/7			
2. UNIV.	1	1	1/9	1/7	1/7			
3. UNIV.	9	9	1	3	3			
4. UNIV.	7	7	1/3	1	1			
5. UNIV.	7	7	1/3	1	1			

	[1	1	1/9	1/7	1/7]		0.038
V5 =	1	1	1/9	1/7	1/7		0.038
	9	9	1	3	3	<i>C</i> 5 –	0.476
	7	7	1/3	1	1	0.5 =	0.222
	7	7	1/3	1	1		0.222

### The Consistency Ratio of Matris C5= 0.025

The results of the last criterium of "Campus Life and Social Life" are as in the Matris of C5. In this criterium, the university in the third order is more likely to be preferred with the 47.6 % percentage.

After this point, to calculate the sequence is of great significance. Depending upon the values, it can be mentioned that the decision about the university selection will be optimal. In this way, the decisions of the students would be rational, not regretful.

The decision matrix is seen in the last part of this application through this Formula [ Cij  $m \times n \times [$  Wi  $n \times 1$ .

0.134	0.245	0.034	0.195 0.038	]	0.184		0.171
0.502	0.046	0.260	0.195 0.038	l	0.195		0.221
0.067	0.105	0.502	0.073 0.476	×	0.094	→D=	0.136
0.034	0.497	0.067	0.073 0.222	I	0.481.		0.154
0.260	0.105	0.134	0.462 0.222		0.044		0.312
L			_				

When the values in the Matris D are assessed regarding the Table 4,  $5^{th}$  university is in the first sequence with the percentage of 32%. And this choice is the best and optimal one for the student.

The Sequence of Importance	Universities	Approximate Values of Importance in Percentage
1	5 <sup>th</sup> UNIVERSITY	31%
2	2 <sup>nd</sup> UNIVERSITY	22%
3	1 <sup>st</sup> UNIVERSITY	17%
4	4 <sup>th</sup> UNIVERSITY	16%
5	3 <sup>rd</sup> UNIVERSITY	14%

Table 4

### **Conclusion and Suggestions**

All of us wants to have a very prestigous job at the end of our education for which we spend a great amount of time on account of the fact that a job that makes us happy enables our life meaningful and productive. The efficiencies of a certain job, perhaps, are presented to a great number of students in many universities. However, the universities have some ups and downs in terms of the opportunities. Even this is the case for the same faculties of the same university. To say in another way, the university that can offer opportunities should be prefered, not an ordinary one. From this perspective, the decision of university selection which is the most critical stage of the education should be given rationally. AHP is the method of mathematical decision by means of which the qualitative and the quantitative cases can be assessed together.

As in the example of here, the university candidate ascertains some certain criteria both with group and individual decisions. These criteria are "the image and the prestige of the university", "the knowledge in education and the technological opportunities", "the career opportunities in the university", "the possibility of employment of the university graduates", "the atmosphere of the campus and the social life". The candidate student decides the university of 5<sup>th</sup> university among the five university alternatives through the AHP method. It can be demonstrated that this result is the most optimal and rational one. This method enables the student to reach the most liked occupational efficiencies in the best and useful atmoshere.

AHP can be used not only in the university selection, but also in all of the management and the organizational activities as the solution to the decisional problems. By means of this, the interested people, the workers, and the managers can find the opportunity to reach the most suitable decision in a shortest way and thanks to the consistency of the decisions, the unnecessary repetitions of the same procedures will be prevented.

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# AHP Modeling in Selection of Students for a Part-Time Work: International Burch University Case

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**Abstract:** Making the right decision for an enterprise is very important for its profit, efficiency, and effectiveness. For these reasons, Decision making in an organization takes a very important place. In this paper, the most appropriate selection of a student for a particular part time work in a university will be examined. There are several methods to make a decision. A multi-criteria Decision Making method will be used to select the most suitable student. The method for this selection will be Analytic Hierarchy Process (AHP). While making a decision many factors should be considered. And Analytic Hierarchy Process is a quite useful method to cover many determinants.

Keywords: Multi-Criteria Decision Making, AHP, Part-Time work,

#### 1. Introduction

Decision Making is a very hard and complicated procedure in many cases through the life of human being. There are usually many factors affecting the decision problem. So some methods have been developed. These are all 'Multi-criteria Decision Making' methods.

### 1.1. Multi-Criteria Decision Making

Parallel to the progress of the science and technology, it is a well-known reality that one dimensional or one variable analysis is not enough to solve more complex problems. In one dimensional analysis, the most important assumption is to suppose all the other variables constant except the one which was analyzed. However, all the events in the universe happen with the influence of many inside and outside effects, and this forms a very complex structure. So the events and the objects should be defined with respect to many variables and collective effects of them (Daşdemir, Güngör, 2002-2003-2004 Vol. I-II). Therefore the importance of Multi-Criteria Decision Making cannot be questioned. AHP is one of Multi-Criteria Decision techniques.

#### **1.2.** Personnel Selection

Human Resources in an organization has an extremely important place (Werther and Davis, 1994). So the preliminary condition is to detect the need for qualified personnel and select them efficiently and effectively. This is the most crucial issue for the organization and the procedure should work fast and correctly (Özgörmüs, Mutlu, and Güner, 2005). And the scientific approach to the problem has a great account. So in this study for giving the decision scientifically Analytic Hierarchy Process will be used.

#### 1.3. Part Time Work in a University

As a result of Both Economic developments in the world and changes on the necessities of work environment, the need for and the importance of 'Part-Time work' have been increased. Organizations employ regular and part-time workers at the same time. While employing a Part-time student, there are some points which should be taken into consideration. And both the university and the student should get benefit from this procedure.

#### 2. Research Background: Analytic Hierarchy Process

Analytic Hierarchy Process (AHP) was developed by Thomas L. Saaty in 1977. It is one of the methods which are used for Multi-criteria Decision Making. The main advantage of this method is that the multi-criteria can easily be managed. Additionally, AHP can be understood easily and it does not contain unnecessary mathematical operations (Başligil, 2005). Through AHP, The observations of Decision Maker's in different psychological and sociological situations can be taken into account and his decision making mechanism will be tried to define. So, the aim is to provide a better environment to Decision Makers (Dağdeviren, Akay and Kurt, 2004).

The required steps to be satisfied via AHP are given below. The necessary explanations with formulas are done in each step.

#### 2.1. Defining the Decision Problem

This step is also known as Decomposition Phase. This phase is the process of decomposition of the problem into sub-problems. In short, this is the formulation of the decision hierarchy. First, the objective of the study is identified. Then the suitable criteria of the objective are indicated. There may be more than one criterion or suncriteria related with the problem. These criteria should be clear and understandable. At the top of the Decision Hierarchy, there is the main goal. At the bottom, there are decision alternatives. The hierarchy may contain more than one phase according to the degree of the details related to the criteria.

#### 2.2. Comparison

The pair-wise comparison matrix is formed by evaluating each criteria and sub-criteria with respect to each other (Kuruüzüm, 2001). There is a comparison matrix shown in Table 1 for four criteria.

[1	$1/a_{21}$	$1/a_{31}$	$1/a_{41}$
<i>a</i> <sub>21</sub>	1	$1/a_{32}$	$1/a_{42}$
<i>a</i> <sub>31</sub>	<i>a</i> <sub>32</sub>	1	$1/a_{43}$
$a_{41}$	<i>a</i> <sub>42</sub>	<i>a</i> <sub>43</sub>	1

Table 1. Pair-wise Comparison matrix for four criteria

While comparing the alternatives a comparison scale which is called Analytic Hierarchy Scale is used. It is given in Table 2.

Intensity of Importance	Definition
1	Equal importance
3	Weak importance of one over other
5	Strong Importance
7	Demonstrated Importance
9	Absolute Importance
2,4,6,8	Intermediate Values
Reciprocals of the above	If activity <i>i</i> has one of the above numbers assigned to it when compared with activity <i>j</i> , then <i>j</i> has the reciprocal value when compared with <i>i</i> .
1.1 – 1.9	When elements are close and nearly indistinguishable

Table 2: Analytic Hierarchy scale

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#### 2.3. Synthesis

After developing pair-wise comparison matrices, the calculations are done for the relative order of the criteria among each other. This section is called "Synthesis Section". If the number of the criteria is five or more, the calculations are very hard in this step. While setting up the priority vectors, Linear Algebra techniques are used. This phase contains the steps: The calculations of maximum eigen-value and corresponding eigen-vector and normalization. There are several methods for normalization. According to the literature most common method is, first the percentages of each element according to its column are calculated and the average of each row is taken. Thus for every criteria priority vectors are found (Kuruüzüm, 2001).

#### 2.4. Consistency Ratio

An important subject for the quality of the resultant decision is the consistency of the evaluation of the decision maker. Being consistent is accepted as a prerequisite for rational thinking. But it is almost impossible to be fully consistent. To get new knowledge is possible by allowing some amount of consistency. AHP does not request perfect consistency. It permits consistency, but in each decision it measures the consistency level. To measure the consistency of the decisions, the Consistency Ratio which was developed by Saaty, is used. The formula for consistency is,  $CI = \frac{\lambda_{max} - n}{n-1}$ 

To get consistent results, consistency ratio should be smaller than 0,1. The Random Index for 15 criteria is shown in Table 3. If the number of the criteria is greater than 15, then the probability of getting healthier results will be lessened (Kwiesielewicz and Uden, 2004).

Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
R. Index	0	0	0.58	0.9	1.12	1.24	1.32	1.41	1.45	1.49	1.51	1.48	1.56	1.57	1.59

#### Table 3: Random Index

## 3. Application

In this study, the aim is to select the most appropriate student for a part time work by using a multi-criteria decision making method AHP.

The selection is done among Economics Department students which applied for the work. The applied students have filled out application forms at first. The conditions in the application form are determined by the Administration of the university and also the criteria of Higher Education Committee of Turkey were considered. The information in the forms has been used in the selection. In addition to this, a survey was applied on the members of the administration. And the results of this survey were inserted to the decision matrix. Hence the criteria which have been considered in this study are,

Economic Situation

- Psychological and Medical Situation
  - Mental problems
  - Medical problems
  - Good mannered
  - Clean wear and neat appearance
- Work Qualifications
  - Work experience
  - Adaptability to the group-work
  - Adaptability to the work environment
  - Work discipline

The hierarchical structure is shown in the Figure 1. At the top of the hierarchy, there is the decision problem. Then in the second step, there are the main criteria. And in the last step, there are sub-criteria.



Figure 1: The hierarchical Structure of the model

The following tables are obtained after the calculation of the means of the survey results. In Table 4, there are the normalized results of the main criteria and their weight vector. It can be easily observed that the most important criterion is Work quality.

Criteria	Economic Situation	Psychology and Medical Situation	Clean wear and neat appearance	Work qualifications	Weight Vector
Economic Situation	0,136	0,313	0,214	0,083	0,187
Psychology and Medical Situation	0,136	0,313	0,357	0,417	0,306
Clean wear and neat appearance	0,045	0,063	0,071	0,083	0,066
Work qualifications	0,682	0,313	0,357	0,417	0,441
Consistency Ratio	1	1	1	1	% 9,887

Table 4: The normalized matrix of the main criteria and their weights

Then the rank of the criteria according to the importance is as follows.

- 1. Work qualifications
- 2. Psychology and Medical Situation
- 3. Economic Situation
- 4. Clean wear and neat appearance

The results in the tables are obtained by using Microsoft Office 2007 Excel. But for easy calculations for AHP problems The Software program Expert Choice may be used.

In Table 5, the sub-criteria of Psychology and Medical Situation are examined and accordingly, the importance of 'Mental problem' is seen.

Psychology and Medical Situation	Mental Problem	Medical Problem	Good Mannered	Weight Vector
Mental Problem	0,714	0,714	0,714	0,714
Medical Problem	0,143	0,143	0,143	0,143
Good Mannered	0,143	0,143	0,143	0,143
Consistency Ratio				% 0,000

**Table 5:** The normalized matrix of the criterion Psychology and Medical Situation and its weights

In Table 6, the weights of sub-criteria of the criterion 'Work qualifications' can be seen. 'Work discipline' is the most important criterion and the least important criterion is 'Adaptability to work environment'.

Work qualifications	Work experience	Adaptability to the group- work	Adaptability to the work environment	Work discipline	Weight Vector	
Work experience	0,125	0,188	0,125	0,107	0,136	
Adaptability to the group- work	0,125	0,188	0,375	0,179	0,217	
Adaptability to the work environment	0,125	0,063	0,125	0,179	0,123	
Work discipline	0,625	0,563	0,375	0,536	0,524	
Consistency Ratio						

Table 6: The normalized matrix of the criterion Work qualifications and its weights

In the conclusion part, the pair wise comparison of alternative students according to the criteria was done. And the result which is shown in Table 7 appeared. As seen in the table, the most appropriate alternative is the alternative B.

	0 197	0,306			0.066	0,441				Weight
	0,187	0,714	0,143	0,143	0,000	0,136	0,217	0,123	0,524	Vector
	ES	MNP	MDP	GM	CWA	EW	AG	WE	WD	
Α	0,229	0,491	0,25	0,283	0,323	0,231	0,208	0,200	0,252	0,298
В	0,343	0,291	0,25	0,418	0,295	0,231	0,525	0,200	0,554	0,379
С	0,326	0,067	0,25	0,082	0,214	0,231	0,109	0,333	0,097	0,169
D	0,103	0,151	0,25	0,217	0,168	0,307	0,158	0,267	0,097	0,154
										1,000

**Table 7:** The normalized matrix of the students and their weights

## 4. Result And Evaluation

Decision making takes place in every part of the life. Especially in large organizations, there are many criteria to select staff. When the number of the criteria is increased, then it would be hard to select the worker. So the selection should be done in a more scientific way. AHP method offers the decision maker an alternative. A software program using AHP can be developed, to do multi criteria decisions.

The same type of study can be applied on many decision cases in the life. The study shows that in many specific and complicated situations, Analytic Hierarchy Process can be easily done. And it can offer the best decision alternative to the Decision Maker.

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# An Application of Fuzzy Pairwise Comparison to Farmer Attitude toward Advertisement Techniques Used for Farm Tractors in Turkey

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**Abstract:** It is the purpose of this study to elicit the priorities of advertisement methods in which the farmers takes into account while buying farm tractor. The data was gathered through a survey that is covering randomly chosen farmers in Aydın. Fuzzy pairwise comparison was used as the analysis technique. Mostly benefited advertisement methods such as field demonstrations, media commercials, fairs, brochures and factory trips were assumed to impact the farmers during their tractor buying process. The study showed that the most important advertisement method that stimulates the farmers to buy tractor is field demonstrations with a weight of 0.87. The subsequent methods are factory trips (0.50), exhibitions at fairs (0.41 and media commercials (0.15).

### Introduction

The decision making mechanism of the farmers for buying has been the aim of many studies so far. A great amount of theories in regard with farmer attitudes were forwarded and discussed up to now. The most attractive theory which is also quite simple and applicable is the one suggested by Kurt Lewin, a psychologist (Figure 1) (Cankurt, 2008). This theory argues that attitudes are the function of personal and environmental factors which leads to developing a model so-called "black box" or "stimulation-response" (Odabaşı ve Barış, 2003).



FigPicture1: The Black Box (Consumer Mind) Model (Odabaşı ve Barış, 2003).

It is presumed that a customer reacts to the events under the effect of a number of individual and surrounding factors. For the ease of analysing the mechanism, grouping of the effective factors on farmer behaviour was the widespread approach in the presumed models. The grouped factors are assumed to influence the decision making process of farmers and give rise to a final behaviour, either buying or non-buying (Çabuk ve Yağcı, 2003). The factories are as follows (Odabaşı and Barış, 2003):

- Psychological factors,
- Socio-cultural factors,
- Demographic factors,
- Conditional factors,
- Marketing factors

This study aims at eliciting the influences of advertisement methods on the tractor buying behaviour of farmers.

As in many areas, marketing studies mostly compare alternative ways that may lead to the ranking of them with their weights or priorities. It has been an important goal for researchers to rank the objectives, products or information sources properly.

There have been some techniques that the researchers used in determining the priorities or rankings of elements in question. One technique that was first used by the researchers is simple ranking in which respondents are simply asked to give rank numbers to the elements while 1 represents the most preferred element and n the least preferred one. Ranking or rating scales are used in areas such as preference list and consumer satisfaction. They typically let individuals rank a product or performance via a numerical scale. While ranking scales can make it easy to assemble and tabulate the results, there are some inherent disadvantages in the gathering of the information. Ranking scales allow for consistency in the tabulation of responses. Each subject is rated using the same standards, so there is fairness in the evaluation process. The results are measurable, which makes for easy comparison. Since ranking scales are numerical, the results obtained are completely objective. Those who examine the results are not swayed by subjective comments or opinions, and there is no way for personal prejudices to factor in. Several different methods can be employed to gather information through ranking scales. In product evaluation, surveys can be done over the phone, in person or by postal mail. In-person surveys can also be conducted at a location where a product is purchased by giving out free samples. In the age of the Internet, information from ranking scales can even be gather via email or online survey. A possible weakness of ranking systems is that the evaluator may rank based on perception. Although those who interpret the results use objective methods, the actual evaluators may rate the subject based on their opinions or prejudices without basing them on fact. The evaluators may also interpret the rating scales differently. For example, with a rating scale that assigns a number based on criteria such as "good," "average" or "occasionally" room is left for interpretation as to what those terms actually mean, which can result in inaccurate ratings. An individual using a ranking scale may be influenced by how a survey is conducted. If a survey is conducted in person, the responder be swayed by the survey taker's personal appearance or tone of voice. They survey taker may also have a personal agenda which influences how they ask the questions.

In fact, studies indicated that more than five information sources can not be efficiently compared by nonpreeducated minds (Baran, 2002). Another technique without such disadvantages that can be used in ranking is simple pairwise comparison. *Simple pairwise comparison* is a sort of divide-and-conquer problem-solving method. It allows one to determine the relative order (ranking) of a group of items (products). This is often used as part of a process of assigning weights to criteria in question. Pairwise comparison generally refers to any process of comparing entities in pairs to judge which of each pair is preferred, or has a greater amount of some quantitative property. The method of pairwise comparison is used in the scientific study of preferences, attitudes, voting systems, social choice and public choice. In psychology literature, it is often referred to as paired comparison.

This study deals with eliciting how much farmers pay attention to each of the advertisement techniques while making decision on buying a farm tractor. The results from the study is expected to serve as a tool for using most effective advertisement techniques to get the best selling levels of farm tractors.

#### **Material And Method**

The data was gathered through a survey that is covering randomly chosen farmers in Aydın. The province of Aydın has 17 counties, including itself as Central County. There is a poli-cultural production structure in Aydın. Total sample size was computed as 121 by estimating the population proportion with 90% confidence level and 7.5% error (Newbold, 1995). Three of the 17 counties of Aydın were selected to represent Aydın and total sample size was distributed to these counties according to their respective shares.

The data was analyzed by the FPC in which the farmers made pairwise comparisons of the five advertisement techniques. FPC presented weighted scores for each of the advertisement methods that enabled us to rank them. In the FPC, a farmer was asked to compare two advertisement techniques. The comparison includes not only a preference of one technique over the other technique but also drawing out the level or power of the preference.

#### **Fuzzy Pair-Wise Comparison**

Fuzzy theory began with a paper on "fuzzy sets" by Zadeh in 1965. Fuzzy set theory is an extension of crisp set theory (Tanaka, 1997). Fuzzy sets are sets with boundaries that are not precise. Thus, fuzzy sets describe ranges of vague and soft boundaries by degree of membership (Lai and Hwang, 1994). The membership in a fuzzy set is a matter of a degree (Klir and Yuan, 1995). Fuzzy set is characterized by a membership function, which is allowed to choose an arbitrary real value between zero and one.

FPC was first used by Van Kooten, Schoney and Hayward (1986) to study farmers' goal hierarchies for use in multiple-objective decision making. The first step of FPC approach in this study is data collection by using a unit line segment as illustrated in Figure 2. Two advertisement methods, *D* (field demonstration) and *T* (factory trips), are located at opposite ends of the unit line. Farmers are asked to place a mark on the line to indicate the degree of their affected advertisement method. A measure of the degree of preference for advertisement method *D* over *T*,  $r_{DT}$ , is obtained by measuring the distance from the farmer's mark to the *D* endpoint. The total distance from *D* to *T* equals 1. If  $r_{DT}$ <0.5, advertisement method *D* is preferred to *D*; if  $r_{DT}$ =0.5, the farmer is indifferent between D and T and if  $r_{DT}$ >0.5, then advertisement method *D* or *T*. For example, if  $r_{DT}$ =1, then advertisement method *D* is absolutely preferred to *T* (Van Kooten et al, 1986).

**Figure 2.** Fuzzy method for making pair-wise comparison between advertisement methods (D)Demonstration and (T)Trip.

The present study employs five advertisements used tractor advertisement. The number of pair-wise comparisons,  $\lambda$ , can be calculated as follows:

(1)

$$\lambda = n * (n-1)/2$$

where n = the number of advertisement methods. Thus, a farmer made ten pair-wise comparisons in a personal interview.

In the second step of FPC, for each paired comparison (i,j),  $r_{ij}$  ( $i \neq j$ ) is obtained.  $r_{ij}$ 's values is collected directly from farmer. Also  $r_{ij}$  ( $i \neq j$ ) is a measure of the degree by which the farmer prefers advertisement method i to advertisement method j and  $r_{ji}$ =1-  $r_{ij}$  represents the degree by which j is preferred to i. Following Van Kooten at al (1986), the farmer's fuzzy preference matrix *R* with elements can be constructed as follows:

$$R_{ij} = \begin{cases} 0 & \text{if } i = j \,\forall \, i, \, j = 1, ..., n \\ r_{ij} & \text{if } i \neq j \,\forall \, i, \, j = 1, ..., n \end{cases}$$
(2)

Finally, a measure of preference,  $\mu$ , can be calculated for each advertisement method by using farmer's preference matrix R. The intensity of each preference is measured separately by the following equation:

$$\mu_{j} = 1 - \left(\sum_{i=1}^{n} R_{ij}^{2} / (n-1)\right)^{1/2}$$
(3)

 $\mu_j$  has a range in the closed interval [0,1]. The larger value of  $\mu_j$  indicates a greater intensity of preference for advertisement method j. As a result, farmer's advertisement methods are ranked from most to least preferable by evaluating the  $\mu$  values.

To analyze advertisement methods derived from FPC, nonparametric statistical tests are used (Başarır and Gillespie, 2003). Friedman test is employed to establish whether the advertisement methods are equally important within a block which is a farmer's advertisement method rankings according to his/her preferences. Since five advertisement methods are presented to farmers, each row includes five values which are the degree of the preferences for the advertisement methods exposed from a farmer. The null hypothesis is that there is no difference in preferences over