NEAR EAST UNIVERSITY

Faculty of Economics &Administrative Sciences

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MAN 400

DEMAND FORECASTING

CASE OF İDAŞ

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Last but not least, I also want to extend my graduate to Assist. Prof Mustafa Tümer and Research Assist.Süleyman Efe for his precious contributions to my project.

ABSTRACT

This study's aim is analyzing İdaş company in order to see effectors of İdaş sales by using SPSS.

The data showed us that İdaş is not well-known in T.R.N.C market and its advertisement is not enough. İdaş products are mostly known by middle class people.

We analyzed the effects of advertising quality control and research and development expenditures on the sales of İdaş by using simple regression analysis. The data were taken from İdaş Company.Simple regression results showed us that variation in the sales was explained 93.7 % by advertising expenditures, 98.2 % by quality control expenditures, and 97.4 % by R&D expenditures. In order to see the total effects of thsese three predictor variables on sales, we also conducted multiple regression. The results were statistically significant for only quality control expenditures. The test results also indicated that these three predictor variables and criterion variable vary 99.9% of the time and 99.9% of the variation in the criterion variable (sales) can be explained by the predictor variables. Moreover, correlation analysis was conducted to see relationships between sales (criterion variable) and

predictor variables. The correlation results showed us that all the predictor variables were highly correlated with sales. Thus, the correlation results were 0.987 for R&D expenditures, 0.968 for advertisement expenditures, and 0.991 for quality control expenditures, and for İdaş bed prices 0.965 for and İstikbal bed prices 0.979 for and İncome level of Turkey 0.399.

There was indirect relationship between İdaş sales and income level. As income level decreases, İdaş sales increased. This is due to İdaş products mostly preferred by middle and low income level people.

The data showed us that İdaş is not well-known in T.R.N.C market and its advertisement is not enough. İdaş products are mostly known by middle class people

Our main target was to see factors which effect the sales if İdaş in the future. In order to have better resource allocation planning.

INTRODUCTION

Forecasting is the process of predicting a future event. It often involves taking historical data and projecting them into the future with some kind of mathematical model. Forecasting can be either intuitive or subjective. The intuitive approach means that you use your common good sense with the model to make judgments. Whereas the subjective model means that the judgment would be made solely on the model itself. Forecasts are seldom prefect, they are costly, time consuming, and are a pain to prepare and to monitor. Forecasts have three time horizons, and the answer to each it all depends. Usually the short range forecast is anywhere from tomorrow up to a year. The medium range is from one year up to about three years, and the long term is about three years till when ever you desire. (www.sen.ca.gov)

There are three basic types of forecasts. The first is the economic forecast. The economic forecast deals with thing like the money supply and inflation rates. The second type of forecast is the technological forecast. The technological forecast is more concerned with technological processes, results in new products, new plants, and new equipment. The last type of forecast is the demand forecast. The demand forecast can be called the sales

forecast of the company's production, and capacity. Which triggers financial decisions,

marketing and personnel planning as well? There are also two forecasting approaches. They

are qualitative and quantitative. Qualitative is with little information, like new products.

Can this be done? Is a qualitative question, this could be said of the new flat screen T.V. On

the other hand is a quantitative. Quantitative is used with vast amounts of data. This can be

called the historical model. Usually this is with math models, like the sale of cars.

Good forecasts are critically important; they influence all levels of business, and drive

a business in many ways.(www.sen.ca.gov)

Source:http://www.forecastingprinciples.com/tofc.html
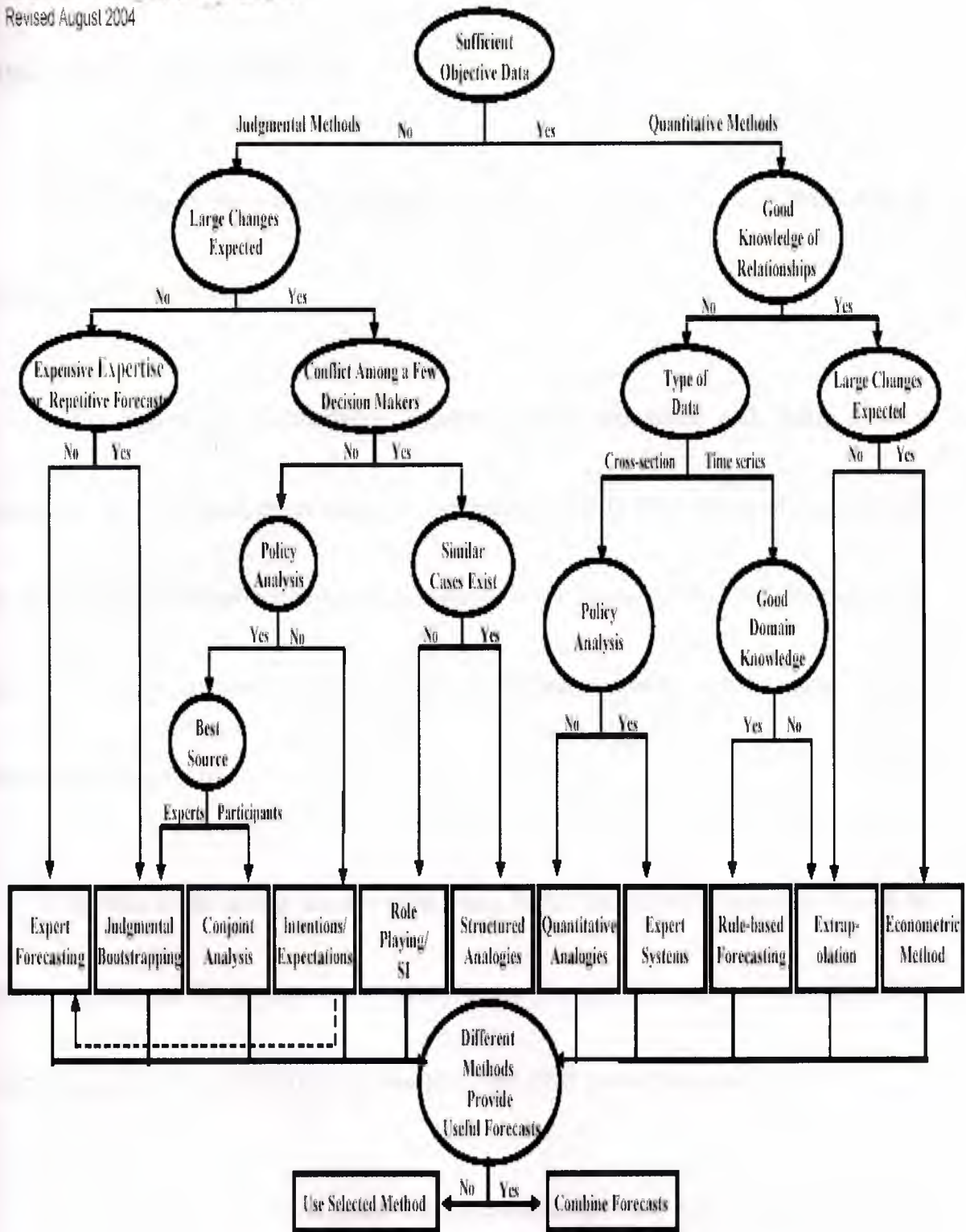
1. BACKGROUND OF IDAS

1.1 Historical Evaluation since 1965.

IDAS, leader in the mattress industry in Turkey, was incorporated in 1965 with 18 partners. (www.idas.com.tr)

At the beginning, the company focused on auto seat frame and spring systems construction. The first production started in September 1967 in Topkapi Istanbul production plant. In 1968, IDAS manufactured its first mattress to the customers. In 1968 the production capacity was only 10 mattresses per day. Today, IDAS has a capacity of 1500 mattresses in 8 hours. (www.idas.com.tr)

In addition to the spring mattress production, IDAS manufactured auto seat frames for Chrysler, B.M.C and T.O.E. between 1968-1970, for Murat 124 (Fiat) between 1970-1973, for Renault after 1973 and for Ford between 1983 and 1990. (www.idas.com.tr)

In 1974, Bursa production plant was constructed and the Renault auto seat frame production was moved to this plant. In the following years, headboard, bed frame and metal furniture etc. production started. (www.idas.com.tr)

Bozüyük production plant, constructed in 1976, started to produce polyurethane foam in 1977. In 1986, we initiated the cylinder block foam production. In 2000 mattress base and mattress base with a storage box production has moved to Bozüyük. (www.idas.com.tr)

In 1992, IDAS signed a royalty agreement with Leggett and Platt Co. (a Fortune 500 company) for manufacturing Mira-Coil spring systems in Turkey. IDAS is the sole manufacturer of Mira-Coil system in the region. (www.idas.com.tr)

In 1994, IDAS has received the TSE-ISO 9002 certificate and became the first producer that has certified its quality in the industry. (www.idas.com.tr)

In 1998, IDAS has launched its IPO in the Istanbul Stock Exchange and has gone public by 20%. (www.idas.com.tr)

The spring mattress industry in the world had started in the early 20th century; however, Turkey waited about 60 years to start production. The first producers were small family factories. IDAS is the first mass producer of spring mattresses with Bonnell spring system in modern norms. (www.idas.com.tr)

Since 1965, IDAS has always been an innovator and leader in the mattress industry in Turkey. It uses the most advanced spring systems, production technologies and continuously introduces new models to the market to meet new and changing customer trends. Mattress base, twin bed and mattress base with a storage box have been launched to the market by IDAS. Mira-Coil and Cosiflex spring systems have been firstly used by IDAS. IDAS was the first mattress exporter in the country. World's greatest hotel chains such as Sheraton, Ramada, Swiss Hotel, and Polat Renaissance have preferred İdaş quality. (www.idas.com.tr)

II.GENERAL INFORMATION ABOUT IDAS

2.1. Profile of Idas.

High Quality products and experience since 1965: The spring bed industry has started

in the early 20th century, however Turkey waited about 60 years to start production. The first

producers were small family factories. İdaş is the first mass producer of spring beds in

modern norms. Quality on design, quality in manufacture and quality in materials has always

been the focus of İdaş. İdaş uses the most advanced spring systems and production

technologies, continuously introduces new models to the market to meet new and changing

customer trends.(www.idas.com.tr)

İdaş strategy has always been to offer quality with reasonable prices. Since İdaş prices

are usually significantly lower than competitors. The main principles has never changed since

1965:" leading quality for reasonable prices"(www.idas.com.tr)

İdaş can easily reach customers all round the country through its headquarters in

Istanbul, and over 2500 retailers under 17 regional wholesalers. (www.idas.com.tr)

İdaş has achieved to gain customer confidence and has become the most reputable company in the sector through its 35-year presence in the market and highest quality. (www.idas.com.tr)

2.2. Vision

To continually increase idaş product quality expectations, take steady steps towards becoming a globally preferred brand, protect idaş trend-setter/leader status in the furniture sector, provide more foreign currency entrance into Turkey through sustained high volume exports, support idaş country's economy by providing jobs to thousands of employees. (cem.artun@idaş.com.tr)

2.3. Mission

To develop and manufacture user and environmentally friendly, world quality furniture designed to meet idaş customers ever changing needs by relying on intensive research and development (cem.artun@idaş.com.tr)

2.4. Value and Principles

2.4.1. Values

İdaş is a dynamic organization and reward employees for teamwork and collaborations. It is this spirit of cooperation that enables us to be an "Employer of Choice" offering exiting work, a positive environment, and consistent recognition. We believe that honest, open two -way communication is essential to a productive work environment and therefore encourage employees to talk things over with their managers. (cem.artun@idaş.com.tr)

2.4.2. Principles

Sustainable development – finding the optimal balance between ecological impact and economic growth. Prevention is better than cure-avoiding problems at the outset. Life cycle approach - from raw materials to manufacturing, to use and disposal. Cooperation-with governmental organization. (www.cem.artun@idas.com.tr)

2.5. Philosophy

İdaş believes that a sustainable development is one of the most challenging issues facing the world. The company is commuted to continually exploring solutions to successfully balance economy and ecology. (www.cem.artun@idas.com.tr)

2.6. Planning for the Future

Due to the economic uncertainties in 2002, no investments have been made other than the TL 96.529 million net fixed asset purchases for mandatory maintenance and renewal.

İdaş Company is continuing its efforts towards increasing efficiency and institutionalization.

Within this context, on one hand, the ISO 9000 and computer system improvement activities are continuing and on the other hand, Corporate Governance Principles are being established in İdaş company. (www.cem.artun@idas.com.tr)

III. SURVEY ANALYSIS

3.1. Charts

Chart 3.1: Illustration of respondent's gender
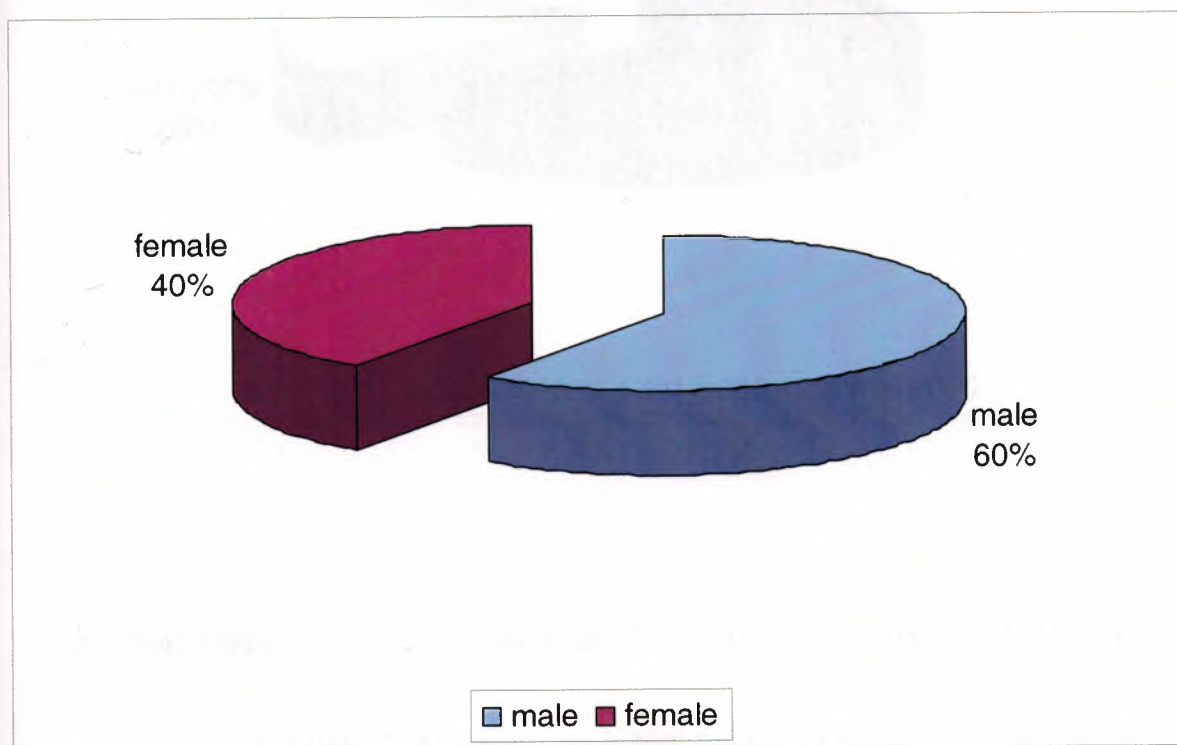
As can be seen from the Chart 1, 60% of the respondents are male and 40% of the respondents are female.

Chart 3.2: Illustrations of categories of respondent's income level
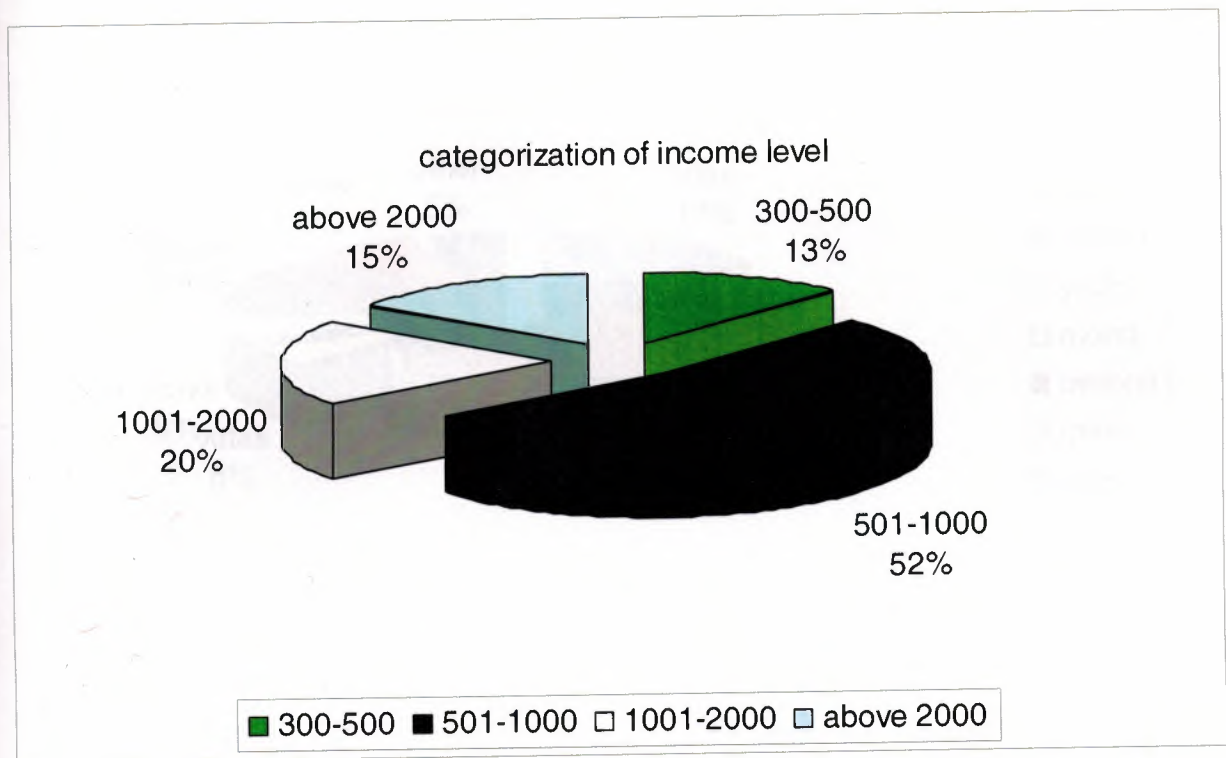
As Chart 2 shows, most of the respondents 52% fall within the range of"5001-1000"

income it is followed by"1001-2000"income level 20%,"above 2000"income level 15% and

"300-500"income level 13%.

Chart 3.3: Brand preferences of respondents
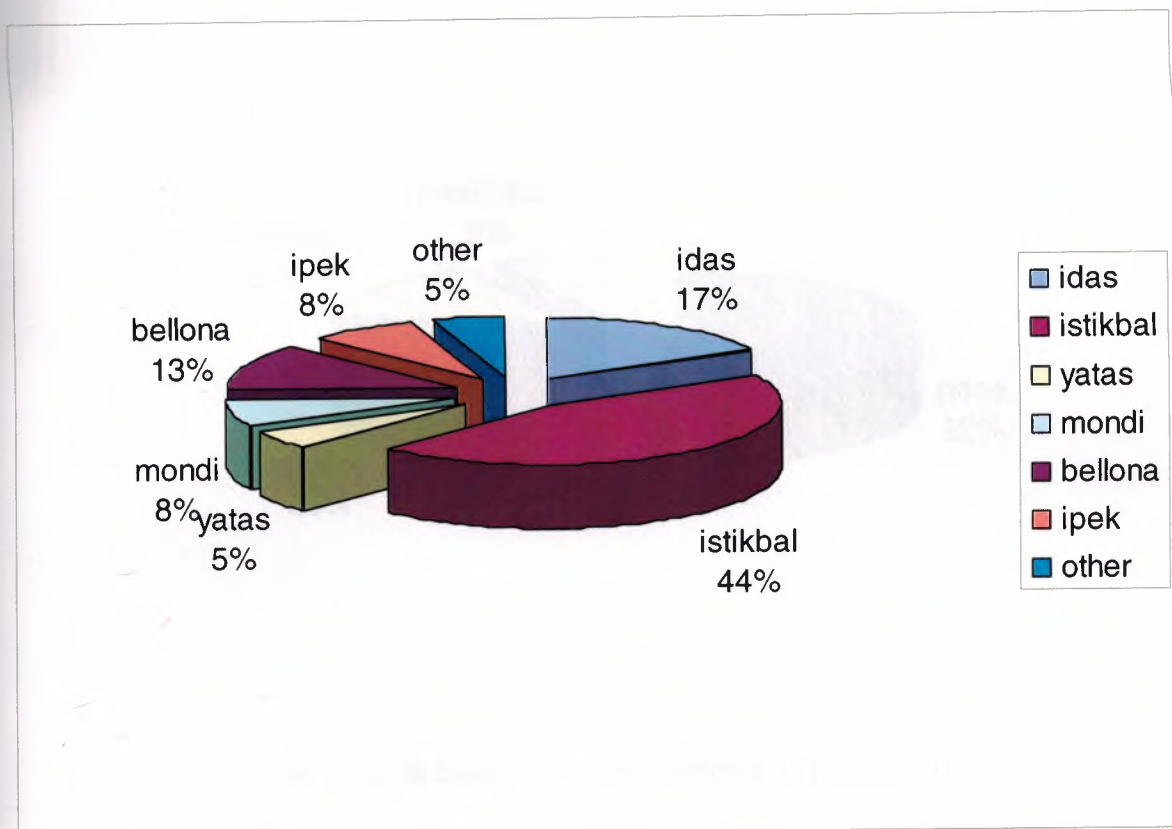
As it is illustrated in Chart 3, almost half of the respondents prefer to use İstikbal's

furniture's 44%; with 17% İdaş is the second. Others have almost had more less some share

.This, Bellona 13%, İpek 8%, Mondi 8%, Yataş 5%, and Others 5% follow İdaş and İstikbal.

Chart 3.4: Illustration of preferred attributes
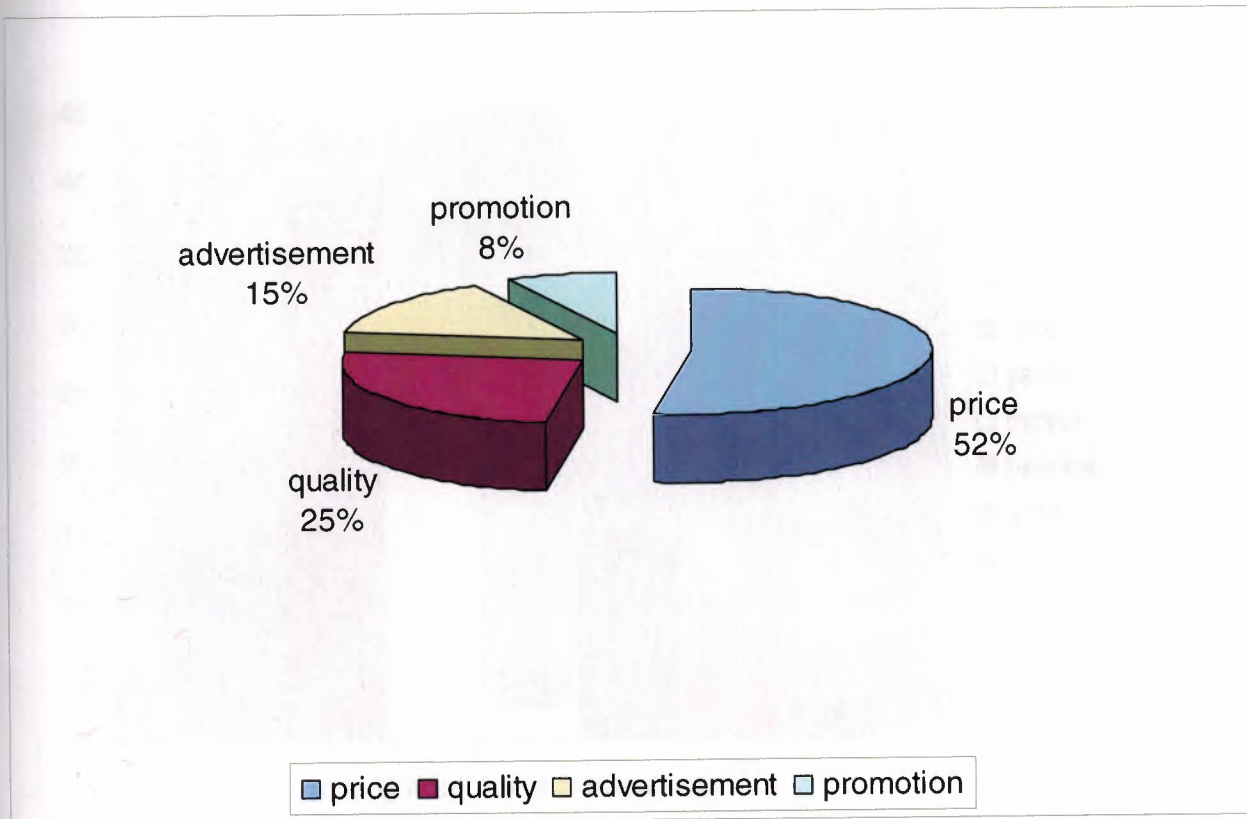
As it is shown in Chart 4, more than half of respondents 52% value price and it is followed by "Quality" attribute 25%"advertisement" 15% and "promotion" 8%.

Chart 3.5: Illustration of TV advertisements of brands
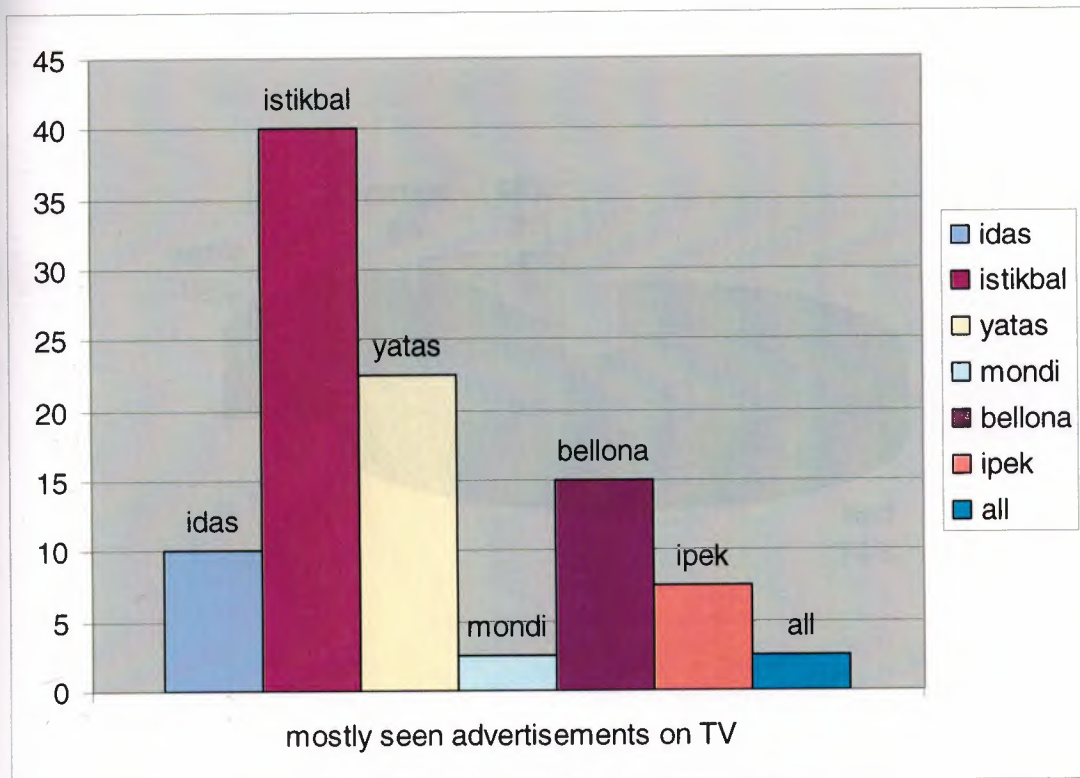
As it can be sea from Chart 5, with 40% İstikbal is the first, with 22, 5% Yataş is the

second, with 15% Bellona is the third, and with only10% İdas is the fourth. We can conclude

that İdaş does not advertise as much as its competitors.

Chart 3.6: Illustration of preferences of respondents on İdaş furniture
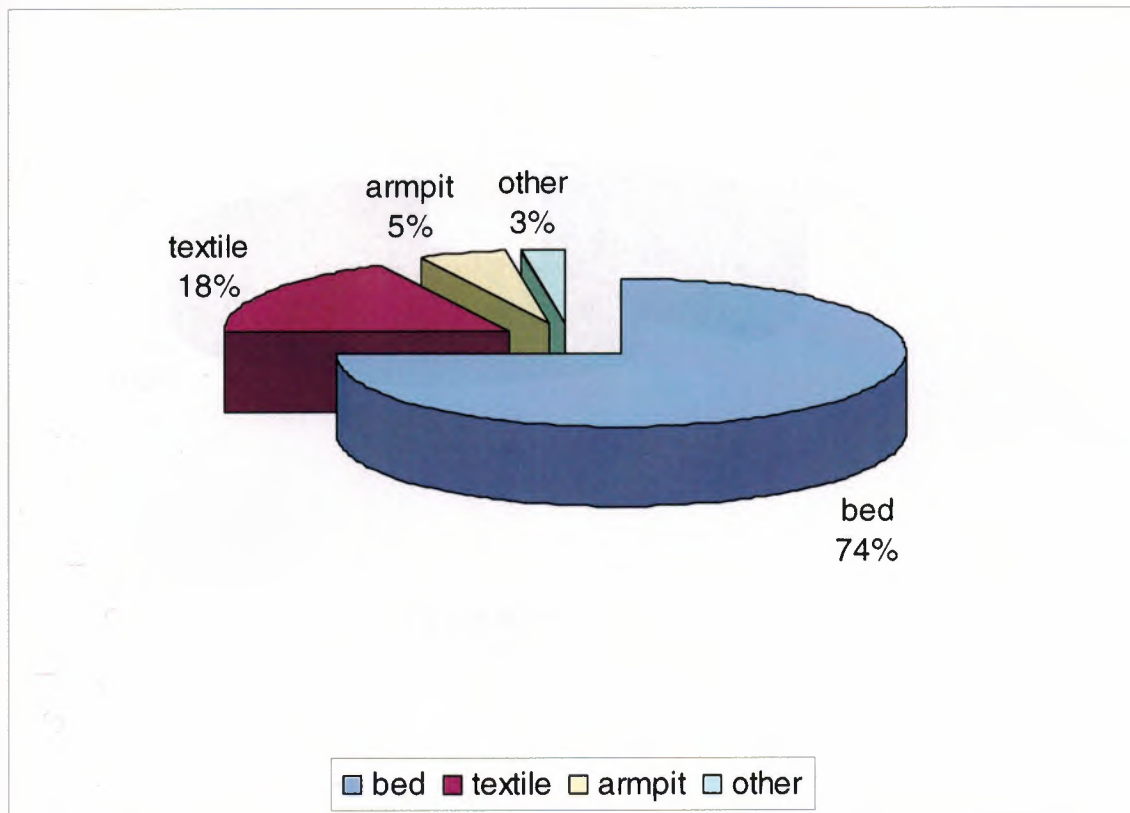
As it is illustrated in Chart 6, 74 % of respondents prefer "bed", 18 % of respondents

prefer textile.

Chart 3.7: Illustration of respondent's use of İdaş products previously
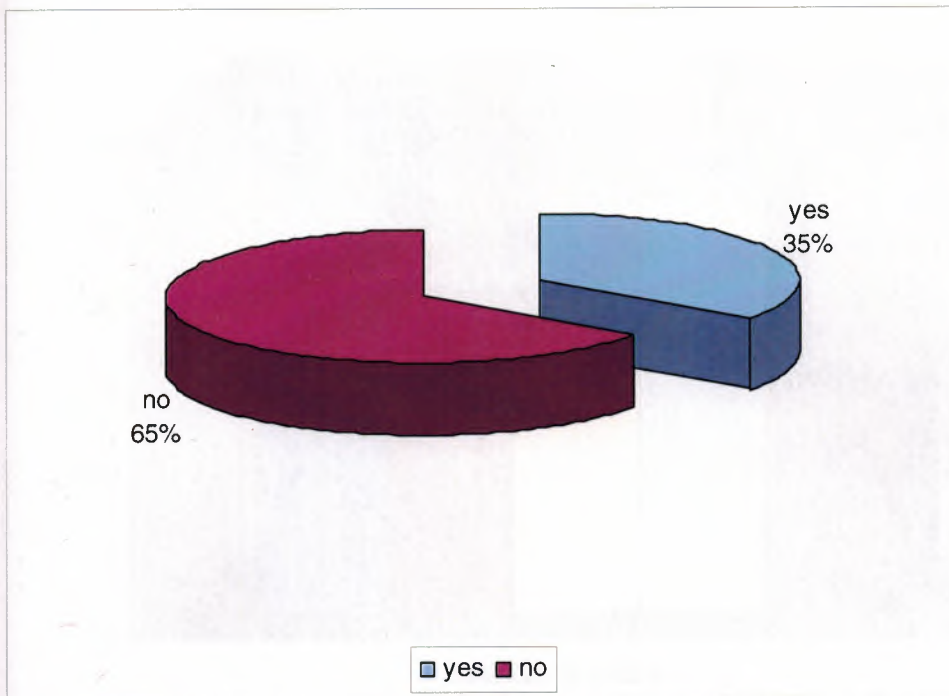
Most of the respondents 65% indicated that they have never used İdaş products, and

35% of the respondents have used İdaş products previously.

Chart 3.8: Illustration of convenience of İdaş stores
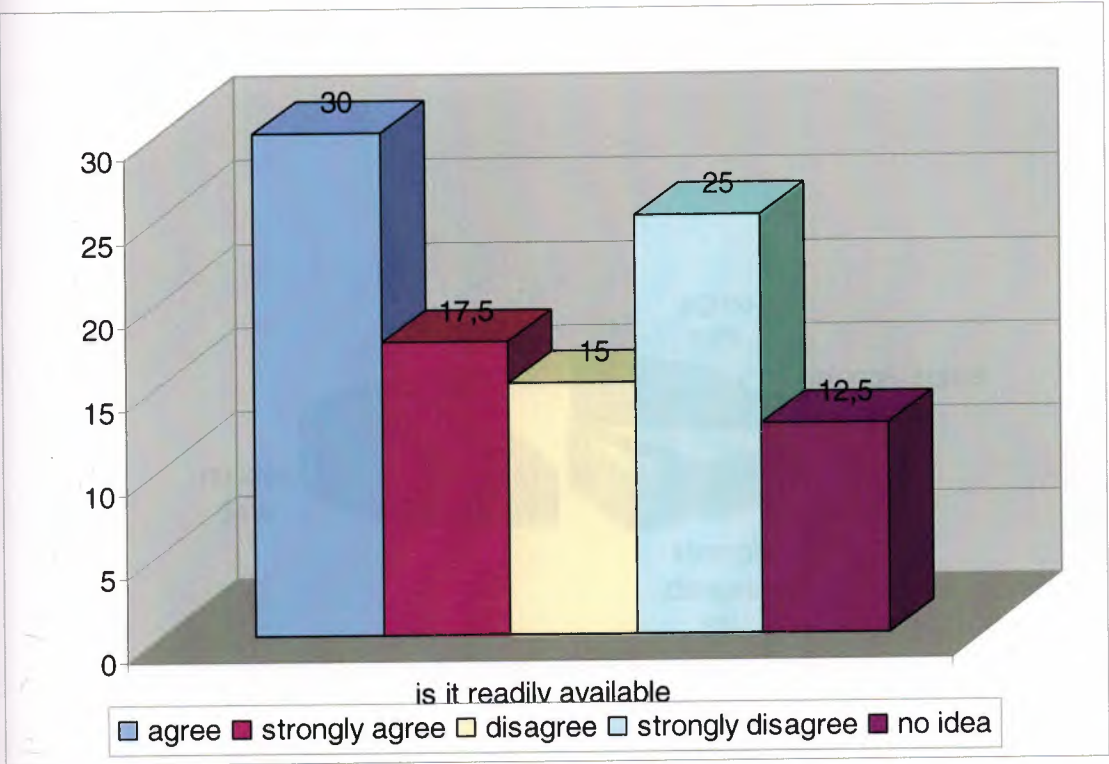
As Chart 8 indicated, most of the respondents showed that İdaş store are readily

available. Again, considerably large percentages 12, 5% of respondents have no idea.

Chart 3.9: Illustration of respondent's ideas about İdaş
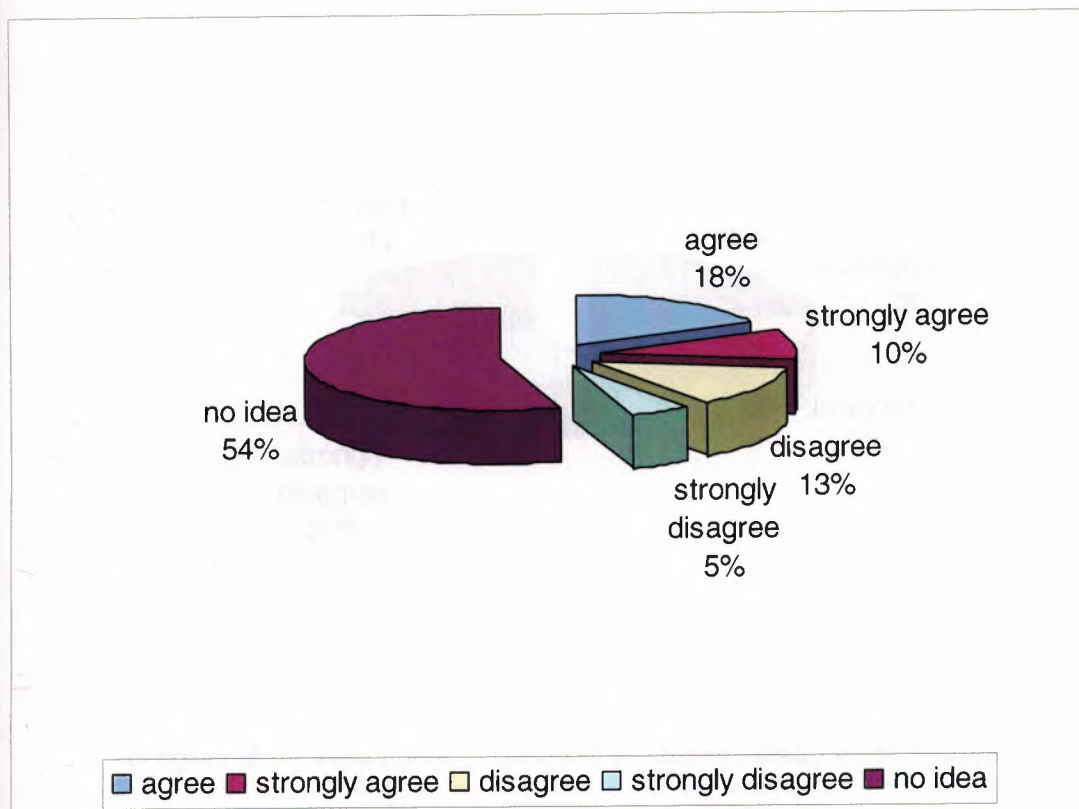
As can be seen from Chart 9, more than half of respondents 54% have no idea about

İdaş products. It shows that İdaş is not used in T.R.N.C extensively.28% of respondents

indicated satisfaction towards İdaş products,18 of respondents indicated dissatisfaction

towards İdaş products.

Chart 3.10: Illustration of İdaş advertisements sufficiency
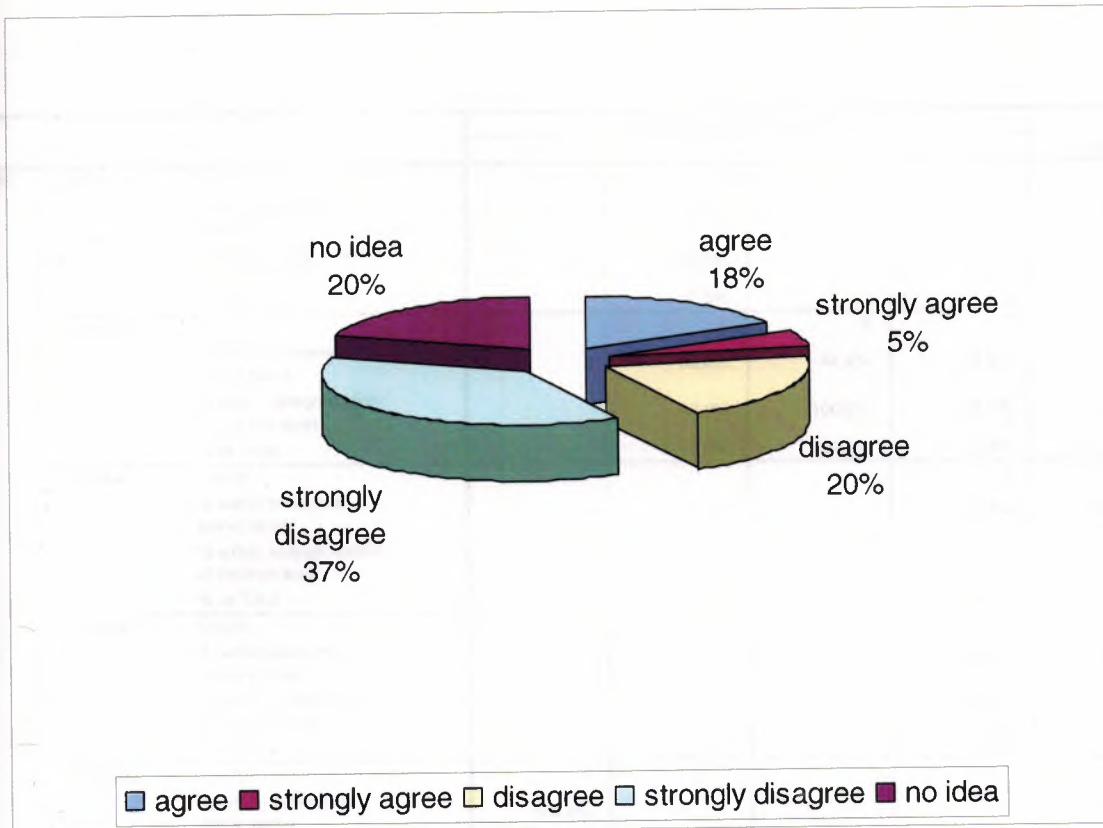
As can be seen from Chart 10, more than half of the respondents see İdaş advertisements as enough.

3.2. Cross Tabulation Analysis

Table.3.1: Preferred brand name and income level analyses

			categorization of income level				Total
			1	2	3	4	
preferred brand name	idas	Count		7			7
		% within preferred brand name		100,0%			100,0%
		% within categorization of income level		33,3%			17,5%
		% of Total		17,5%			17,5%
	istikbal	Count		9	8	1	18
		% within preferred brand name		50,0%	44,4%	5,6%	100,0%
		% within categorization of income level		42,9%	100,0%	16,7%	45,0%
		% of Total		22,5%	20,0%	2,5%	45,0%
	yatas	Count				2	2
		% within preferred brand name				100,0%	100,0%
		% within categorization of income level				33,3%	5,0%
		% of Total				5,0%	5,0%
	mondi	Count				3	3
		% within preferred brand name				100,0%	100,0%
		% within categorization of income level				50,0%	7,5%
		% of Total				7,5%	7,5%
	bellona	Count	5				5
		% within preferred brand name	100,0%				100,0%
		% within categorization of income level	100,0%				12,5%
		% of Total	12,5%				12,5%
	ipek	Count		3			3
		% within preferred brand name		100,0%			100,0%
		% within categorization of income level		14,3%			7,5%
		% of Total		7,5%			7,5%
	other	Count		2			2
		% within preferred brand name		100,0%			100,0%
		% within categorization of income level		9,5%			5,0%
		% of Total		5,0%			5,0%

1) A one sample chi-square test was conducted to assess whether there is relationship

between preferred brand name and income levels. The results of the test were significant;

$X_2(18 \underline{N} = 40) = 82,910, \underline{P} < 0,0001$

Table.3.2: Preferred idaş furniture and income level analyses

			categorization of income level				Total
			1	2	3	4	
prefered idas furniture	bed	Count	5	21	4		30
		% within prefered idas furniture	16,7%	70,0%	13,3%		100,0%
		% within categorization of income level	100,0%	100,0%	50,0%		75,0%
		% of Total	12,5%	52,5%	10,0%		75,0%
	textile	Count			4	3	7
		% within prefered idas furniture			57,1%	42,9%	100,0%
		% within categorization of income level			50,0%	50,0%	17,5%
		% of Total			10,0%	7,5%	17,5%
	armpit	Count				2	2
		% within prefered idas furniture				100,0%	100,0%
		% within categorization of income level				33,3%	5,0%
		% of Total				5,0%	5,0%
	other	Count				1	1
		% within prefered idas furniture				100,0%	100,0%
		% within categorization of income level				16,7%	2,5%
		% of Total				2,5%	2,5%

2) A one sample chi-square test was conducted to assess whether there is relationship between preferred İdaş product and income levels. The results of the test were significant;

$X_2(9 \underline{N} = 40) = 37,333, \underline{P} < 0,0001$

Table.3.3: Preferred brand name and category of age analyses

			category of age					Total
			1	2	3	4	5	
preferred brand name	idas	Count		6	1			7
		% within preferred brand name		85,7%	14,3%			100,0%
		% within category of age		60,0%	6,3%			17,5%
		% of Total		15,0%	2,5%			17,5%
	istikbal	Count		1	15	2		18
		% within preferred brand name		5,6%	83,3%	11,1%		100,0%
		% within category of age		10,0%	93,8%	40,0%		45,0%
		% of Total		2,5%	37,5%	5,0%		45,0%
	yatas	Count				2		2
		% within preferred brand name				100,0%		100,0%
		% within category of age				40,0%		5,0%
		% of Total				5,0%		5,0%
	mondi	Count				1	2	3
		% within preferred brand name				33,3%	66,7%	100,0%
		% within category of age				20,0%	100,0%	7,5%
		% of Total				2,5%	5,0%	7,5%
	bellona	Count	5					5
		% within preferred brand name	100,0%					100,0%
		% within category of age	71,4%					12,5%
		% of Total	12,5%					12,5%
	ipek	Count	2	1				3
		% within preferred brand name	66,7%	33,3%				100,0%
		% within category of age	28,6%	10,0%				7,5%
		% of Total	5,0%	2,5%				7,5%
	other	Count		2				2
		% within preferred brand name		100,0%				100,0%
		% within category of age		20,0%				5,0%
		% of Total		5,0%				5,0%

3) A one sample chi-square test was conducted to assess whether there is relationship between preferred brand name and age. The results of the test were significant;

$X_2(24 \underline{N} = 40) = 105,036, \underline{P} < 0, 0001$

Table.3.4: Gender and brand name analyses

| | | | preferred brand name | | | | | | | |
			idas	istikbal	yatas	mondi	bellona	ipek	other	Total
gender	male	Count	5	10	1	1	3	3	1	24
		% within gen	20,8%	41,7%	4,2%	4,2%	12,5%	12,5%	4,2%	00,0%
		% within pre brand name	71,4%	55,6%	50,0%	33,3%	60,0%	00,0%	50,0%	60,0%
		% of Total	12,5%	25,0%	2,5%	2,5%	7,5%	7,5%	2,5%	60,0%
	femal	Count	2	8	1	2	2		1	16
		% within gen	12,5%	50,0%	6,3%	12,5%	12,5%		6,3%	00,0%
		% within pre brand name	28,6%	44,4%	50,0%	66,7%	40,0%		50,0%	40,0%
		% of Total	5,0%	20,0%	2,5%	5,0%	5,0%		2,5%	40,0%

4) A one sample chi-square test was conducted to assess whether there is relationship between gender and preferred brand name. The results of the test were not significant;

$X_2(6 \underline{N} = 40) = 3,585, \underline{P} = 0,733$

Table.3.5: Gender and advertisement channel analyses

		advertisement channel				Total
		TV	Newspaper	Radio	Others	
gender	male	14	7	2	1	24
		58,3%	29,2%	8,3%	4,2%	100,0%
		60,9%	70,0%	50,0%	33,3%	60,0%
		35,0%	17,5%	5,0%	2,5%	60,0%
	female	9	3	2	2	16
		56,3%	18,8%	12,5%	12,5%	100,0%
		39,1%	30,0%	50,0%	66,7%	40,0%
		22,5%	7,5%	5,0%	5,0%	40,0%

5) A one sample chi-square test was conducted to assess whether there is relationship between gender and advertisement channel. The results of the test were not significant;

$X_2(3 \underline{N} = 40) = 1,479, \underline{P} = 0,687$

IV. MULTIPLE AND SIMPLE REGRESSION ANALYSIS OF İDAŞ

4.1. Anova Test and Regression Analysis of Multiple Methods

A multiple regression analysis was conducted to forecast the sales of İdaş by using advertising expenditures research and development expenditures and quality control expenditures and İdaş bed prices and İstikbal bed prices and income level of Turkey.

The predictor variables were "Quality control Expenditures (X_1)" "Advertising Expenditures (X_2)"and "Research and Development Expenditures (X_3)"and "İdaş Bed Prices(X_4)" and "İstikbal Bed Prices(X_5)" and "Income Level of Turkey(X_6)" while the criterion variable was the sales.

$$Y_{SALES} = 1.626.361.448.116 + 716{,}822\ X_1 + (-6{,}398\ X_2) + 383{,}582\ X_3 + (-8935{,}53$$

$$X_4) + 11069{,}29\ X_5 + (-2202595135{,}73\ X_6)$$

b_1 is 716,822: measures the effect of the predictor variable "Quality Control Expenditures" on the criterion variable "Sales", holding the other predictors "Advertising Expenditures" and "Research and Development Expenditures" constant.

b_2 is -6,398: measures the effect of "Advertising Expenditures" on the criterion variable "Sales", holding the other predictors "Research and Development Expenditures" and "Quality Control Expenditures" cons tent

b_3 is 383,582: measures the effect of the predictor variable "Research and Development Expenditures" on the criterion variable "Sales", holding the other predictors "Advertising Expenditures" and "Quality Control Expenditures" cons tent

b_4 is -8935,53: measures the effect of the predictor variable "İdaş bed prices" on the criterion variable "Sales", holding the other predictors "Advertising Expenditures" and "Quality Control Expenditures" cons tent

b_5 is 11069,29: measures the effect of the predictor variable "İstikbal Bed Prices" on the criterion variable "Sales", holding the other predictors "Advertising Expenditures" and "Quality Control Expenditures" cons tent

b_6 is -2202595135,7: measures the effect of the predictor variable "Income Level of Turkey" on the criterion variable "Sales", holding the other predictors "Advertising Expenditures" and "Quality Control Expenditures" cons tent

R=0,999: It indicates that sales, advertising expenditures, research and development expenditures and quality control expenditures and İdaş Bed Prices and İstikbal Bed Prices and Income Level of Turkey vary together 99.9% of the time.

R^2=0,999: It indicates that advertising expenditures, research and development expenditures and quality control expenditures and İdaş Bed Prices and İstikbal Bed Prices and Income Level of Turkey explain 99.9%of the variation in the sales of İdaş.

Within 5% significance level, the relationship between quality control and sales is found out to be not significant. ($t_{quality\ control}$ = 1,592, p=0,209).

Within 5% significance level, the relationship between research development expenditures and sales is found out to be not significant. ($t_{research\ and\ development}$=1,933,p=0,148)

Within 5% significance level, the relationship between advertising expenditures and sales is found out to be not significant. ($t_{advertisement\ expenditures}$ = -1,011,p=0,386)

Within 5% significance level, the relationship between İdaş bed prices and sales is found out to be not significant. ($t_{İdaş\ Bed\ Prices}$ = -0,104,p= 0,923)

Within 5% significance level, the relationship between İstikbal bed prices and sales is found out to be not significant. (t $_{\text{İstikbal Bed Prices}}$ = 0,122,p= 0,909)

Within 5% significance level, the relationship between income level of Turkey and sales is found out to be not significant. (t $_{\text{İncome Level of Turkey}}$ = -2,348,p= 0,100)

Table 4.1: Anova test

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	130,34	6	2,172	468,170	,000
	Residual	139,20	3	4,640		

4.2. Correlation Analysis of Multiple Methods

The correlation between "sales" and "quality control expenditures" is 0, 991 found

out to be is statistically significant. The correlation between "sales" and "research and

development expenditures" is 0,987, but it is statistically significant. The correlation between

"sales" and "İdaş bed prices" is 0,965 found out to be is statistically significant. The

correlation between "sales" and "İstikbal bed prices" is 0,979 found out to be is statistically

significant The correlation between "sales" and "income level of Turkey" is 0,399 found out

to be is statistically significant The correlation between sales and advertisement expenditure is

0,968 but again it is statistically significant

Table 4.2: Correlation analysis

		SALES	R.Devp. Exp	Advr. Exp	Q.Contrl .Exp	ıDASBED price	ıSTıKBAL price	IN.LEVEL of Turkey
Pearson Correlation	SALES	1,000	,987	,968	,991	,965	,979	,399
	RD	,987	1,000	,982	,992	,964	,970	,528
	ADVEXP	,968	,982	1,000	,992	,960	,955	,548
	QULCONT	,991	,992	,992	1,000	,974	,978	,488
	ıDASBED	,965	,964	,960	,974	1,000	,996	,500
	ıSTıKBAL	,979	,970	,955	,978	,996	1,000	,451
	IN.LEVEL	,399	,528	,548	,488	,500	,451	1,000
Sig. (1-tailed)	SALES	,	,000	,000	,000	,000	,000	,126
	RD	,000	,	,000	,000	,000	,000	,058
	ADVEXP	,000	,000	,	,000	,000	,000	,051
	QULCONT	,000	,000	,000	,	,000	,000	,076
	ıDASBED	,000	,000	,000	,000	,	,000	,070
	ıSTıKBAL	,000	,000	,000	,000	,000	,	,095
	IN.LEVEL	,126	,058	,051	,076	,070	,095	,

4.3. ANOVA Test and Regression Analysis of Simple Methods

A simple regression analysis was conducted to forecast the sales of İdaş by using advertising expenditures research and development expenditures and quality control expenditures as predictor variables.

The predictor variables were "Advertising Expenditures", Quality control Expenditures" and "Research and Development Expenditures", while the criterion variable was the sales.

Eq.1.1. Quality Control Expenditures

$$Y_{SALES} = 9.978.704.785.622 + 705,88X_1$$

Eq.1.2. Advertising Expenditures

$$Y_{SALES} = 5.440.337.793.470 + 14,61 X_2$$

Eq.1.3. Research and Development Expenditures

$$Y_{SALES} = 6.545.201.304.281 + 876,45 X_3$$

b_1 is 705,88 measures the effect of the predictor variable "Quality Control Expenditures" on the criterion variable "Sales".

b_2 is 14,61: measures the effect of "Advertising Expenditures" on the criterion variable "Sales".

b_3 is 876,45: measures the effect of the predictor variable "Research and Development Expenditures" on the criterion variable "Sales".

X_1=Quality Control Expenditures

X_2=Advertising Expenditures

X_3=Research and Development Expenditures

R= 0,968: It indicates that sales, advertising expenditures very together 96.8 % of the time.

R^2=0, 937: It indicates that advertising expenditures explain 93, 7% of the variation of the sales of İdaş.

R= 0, 987: It indicates that sales, research and development expenditures very together 98.7% of the time.

R^2=0, 974: It indicates that research and development expenditures explain 97.4% of the variation of the sales of İdaş

R= 0, 991: It indicates that sales, quality control expenditures explain vary together 99.1 % of the time.

R^2=0.982: It indicates that quality control expenditures explain 98.2% of the variation of the sales of İdaş.

Within 5% significance level, the relationship between quality control and sales is statically significant.($t_{quality\ control}$ = 20, 98, p<0.0001)

Within 5% significance level, the relationship between research development expenditures and sales is statically significant. ($t_{research\ and\ development}$= 17,42, p<0.0001)

Within 5% significance level, the relationship between advertising expenditures and sales is statically significant. ($t_{advertisement\ expenditures}$ =10,95, p<0.0001)

Table 4.3: Anova test (Quality Control Expenditures)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1,281	1	1,281	440,178	,000
	Residual	2,329	8	2,911		

Table 4.4: Anova test (Research and Development Expenditures)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1,271	1	1,271	303,539	,000
	Residual	3,350	8	4,188		

Table 4.5: Anova test (Advertising Expenditures)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1,223	1	1,223	119,981	,000
	Residual	8,156	8	1,019		

4.4. Correlation Analysis of Simple Methods

The correlation between "sales" and "quality control expenditures" is 0, 991 found out

to be is statistically significant. The correlation between "sales" and "research and

development expenditures" is 0, 987 but it is statistically significant. The correlation between

advertisement expenditure is 0,968 but again it is statistically significant sales and

Table 4.6: Correlation analysis (Quality Control Expenditures)

		SALES	QULCONT
Pearson Correlation	SALES	1,000	,991
	QULCONT	,991	1,000
Sig. (1-tailed)	SALES	,	,000
	QULCONT	,000	,
N	SALES	10	10
	QULCONT	10	10

Table 4.7: Correlation analysis (Research and Development Expenditures)

		SALES	RD
Pearson Correlation	SALES	1,000	,987
	RD	,987	1,000
Sig. (1-tailed)	SALES	,	,000
	RD	,000	,
N	SALES	10	10
	RD	10	10

Table 4.8: Correlation analysis (Advertising Expenditures)

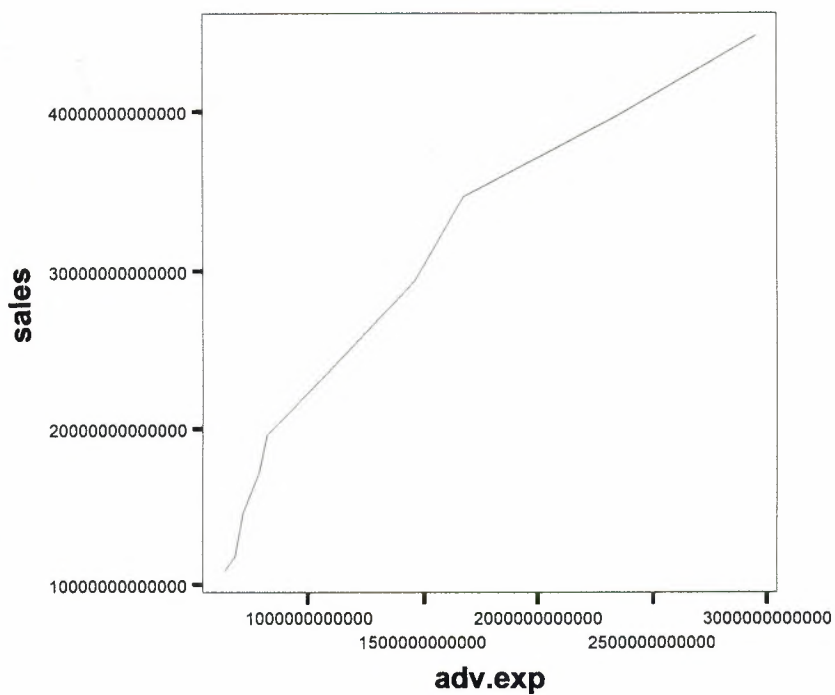|		SALES	ADVEXP
Pearson Correlation	SALES	1,000	,968
	ADVEXP	,968	1,000
Sig. (1-tailed)	SALES	,	,000
	ADVEXP	,000	,
N	SALES	10	10
	ADVEXP	10	10

Graph 4.1: Sales & Research and Development Expenditures

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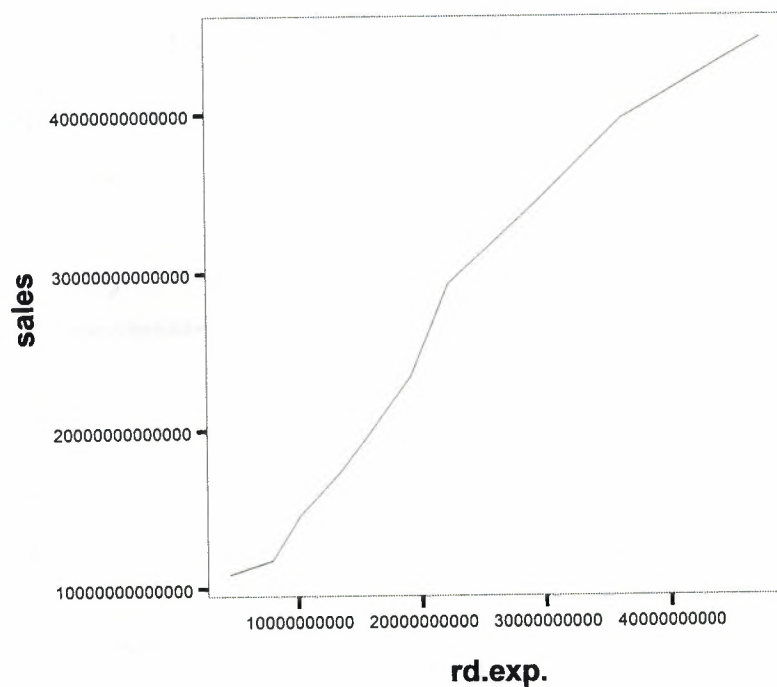
Graph 4.2: Sales & Quality control Expenditures
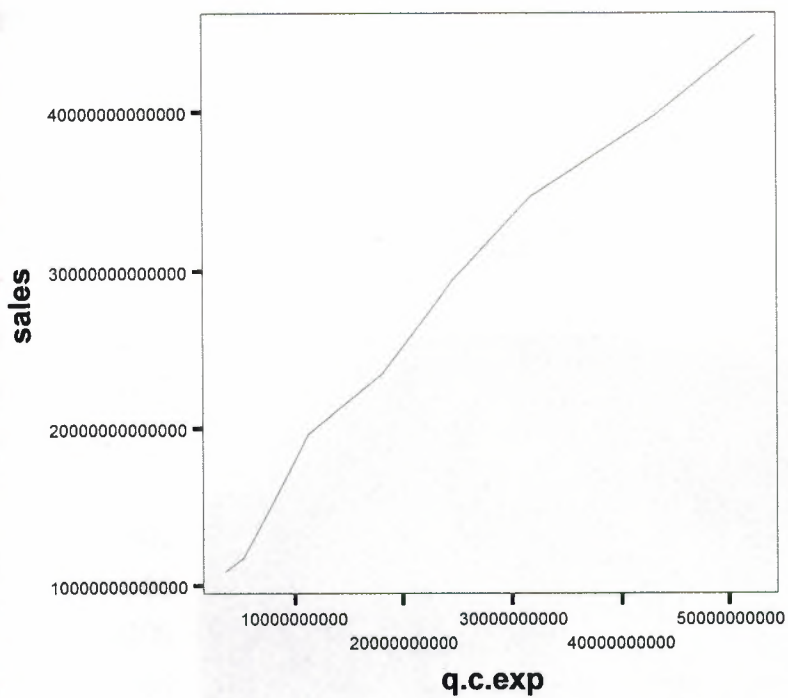
Graph 4.3: Sales & Advertisement Expenditures

4.5. Sales Analysis of İdaş
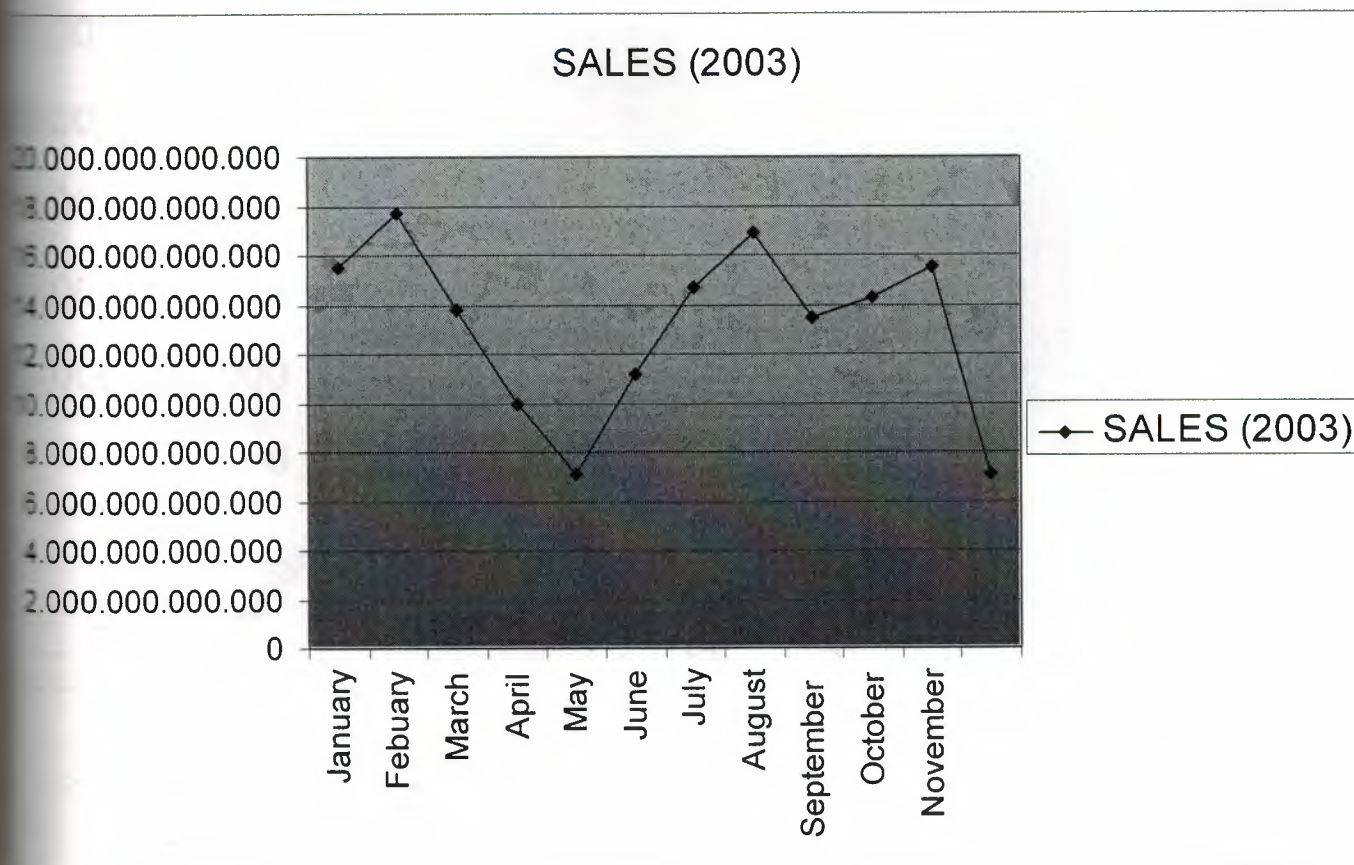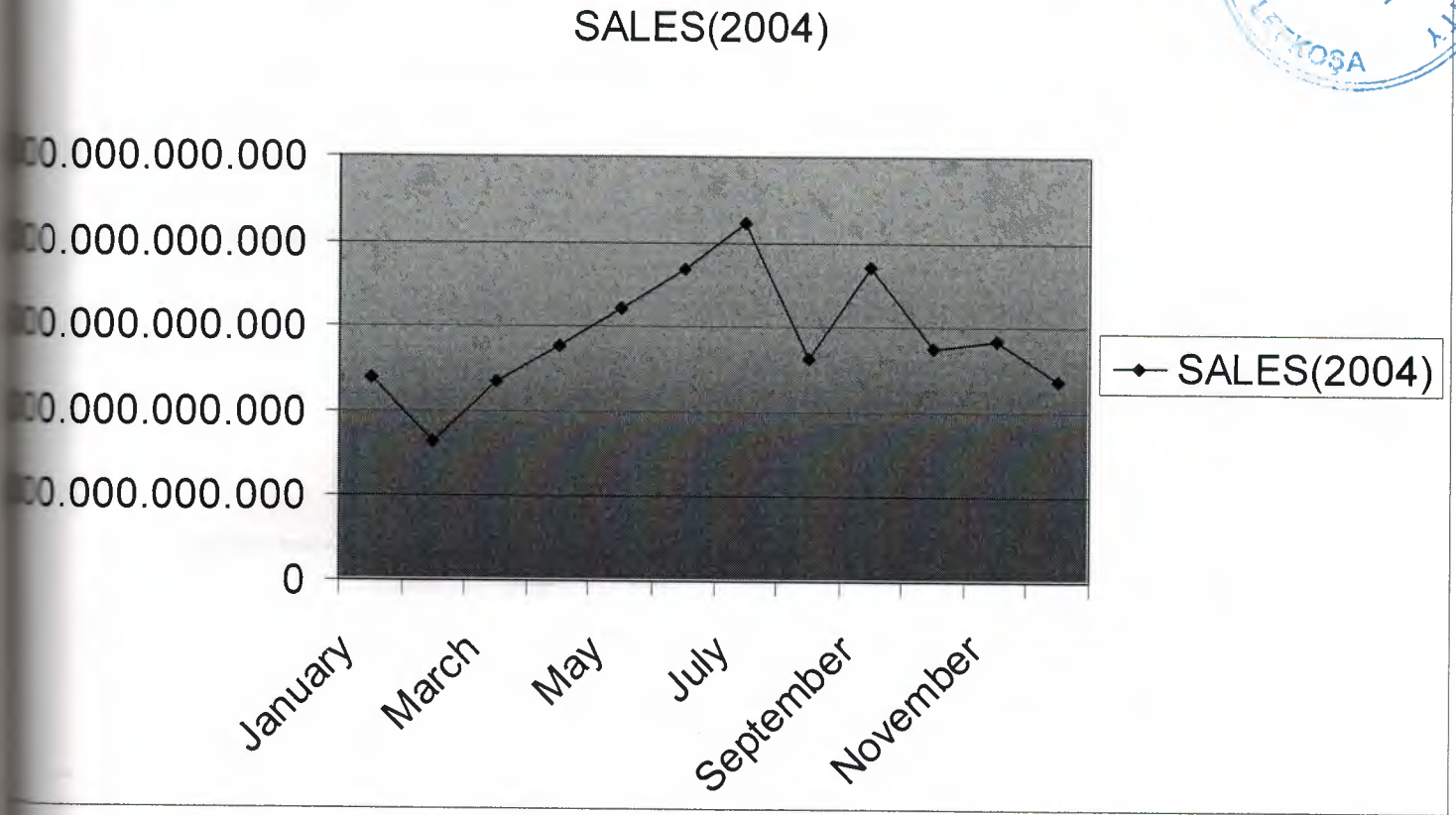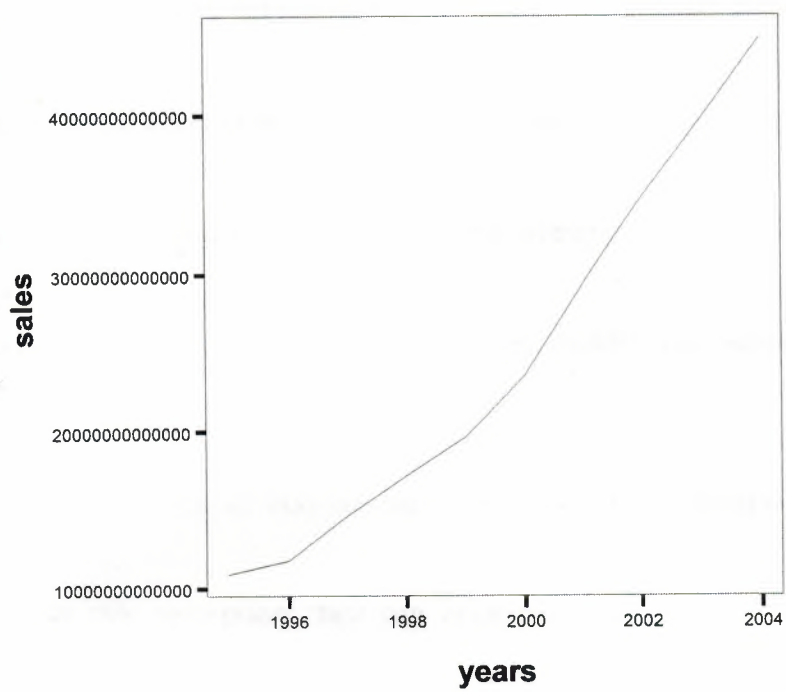
Figure 4.1: Sales of İdaş (2003)

SALES (2003)

20.000.000.000.000	
18.000.000.000.000	
16.000.000.000.000	
14.000.000.000.000	
12.000.000.000.000	
10.000.000.000.000	
8.000.000.000.000	
6.000.000.000.000	
4.000.000.000.000	
2.000.000.000.000	
0	

January, Febuary, March, April, May, June, July, August, September, October, November

→ SALES (2003)

Figure 4.2: Sales of İdaş (2004)

SALES(2004)

Graph 4.4: Sales of İdaş (1995-2004)

V. CONCLUSION AND RECOMMENDATION

When sales data analyzed for the years 2003 and 2004, it has been noticed that İdaş has seasonal sales in which it is sales increased at summer time .The reason could be due to the returns of people from mostly Europe countries that bring huge amount of money in to the country. It has been noticed that İdaş targets middle class people.

Low price of İdaş products can create a misperception of low quality. In order to remove this perception, they can emphasize quality. After noticing the crucial effects of advertising, quality control, and research and development expenditures, I can conclude that when Idas invest more in quality control, research and development, and advertising its sales will increase. Moreover, income level and price of competitors are good predictors of İdaş sales. They can create a new brand for targeting upper class people. By this way they can meet needs of both middle and upper class segment without ruining the brand name.

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