A STUDY ON THE BRAND VALUE-PROFITABILITY RELATIONSHIP: HIROSE METHOD AND PANEL CAUSALITY ANALYSIS*

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ABSTRACT

Theaim of this study is to determine the brand value based on the financial data and to analyze the causality relationship between the obtained values and the asset profitability levels of the firms. Analyzing the food sector firms located in Brand Finance Turkey-100 list over the last four years, Hirose method is used to measure the financial-based brand value during the period 2008:Q1-2018:Q3. Additionally, panel causality analysis is used in determining whether there is a relationship between the brand value and asset profitability. The empirical results show that there is a unidirectional causality relationship from brand value to return on assets.

Keywords:Financial brandvalue, Hirose method, Panel causality analysis, Profitability, Turkey.

Jel Classification: M10, L25.

Marka Değeri ile Kârlılık İlişkisi Üzerine Bir İnceleme: Hirose Yöntemi ve Panel Nedensellik Analizi

ÖZET

Bu çalışmanın amacı finansal verilere dayalı marka değerini belirlemek ve elde edilen değerler ile firmaların aktif kârlılık seviyeleri arasındaki nedensellik ilişkisini analiz etmektir. Çalışmanın örneklemi son dört yıl itibariyle Türkiye'nin en değerli 100 markası listesinde yer alan gıda sektörü firmalarından oluşmaktadır. 2008:Ç1-2018:Ç3 dönem aralığının ele alındığı çalışmada finansal bazlı marka değerini ölçmek amacıyla Hirose yöntemi kullanılmış olup, marka değeri ile aktif kârlılığı arasındaki ilişkinin belirlenmesinde ise panel nedensellik analizi yapılmıştır. Elde edilen bulgular marka değerinden aktif kârlılığına doğru tek yönlü bir nedensellik ilişkisinin olduğunu göstermiştir.

Anahtar Kelimeler: Marka değeri, Hirose yöntemi, Panel nedensellik analizi, Kârlılık, Türkiye.

Jel Sınıflandırması: M10, L25.

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1. INTRODUCTION

Traditional accounting approach is based on the traditional principles considering the need and model of tangible assets, and therefore, several problems may be arisen in keeping intangible assets accounts. At this point, it is not possible for the investors to have sufficient knowledge about the performance of the firms by looking at these indicators because the traditional accounting approach only takes into account indicators such as capital yield per share or income ratio. Nowadays, firm value or financial performance is estimated not only by the ratio between total business volume, market participation or market price and net income per share, but also by a number of intellectual capital elements such as brand value, customer loyalty, corporate culture. Hence, it is necessary to develop the accounting standards that consider intangible assets and to update them with appropriate financial and non-financial indicators in order to produce more realistic financial reports (Aničić et al., 2016:1-3).

The brand concept refers to the emblems which include the name, logo, sign, symbol and packaging designs used to promote the products and/or services of the companies and to express the different sides of the competing companies' products and/or services. This concept plays an important role in increasing customer loyalty and trust in the products or services of companies and allows establishing an ongoing relationship with customers (Hirose et al., 2002: 10). Today, companies with the highest market value are mostly strong and well-known companies with a brand value. At this point brand value has a significant impact on firm performance measured in intangible assets (goodwill) of firms. (Aničić et al., 2016:6).As with many types of investment, investment expenditures to create brand value are seen as an element of increasing financial performance and this value contributes significantly to achieving the desired return (Yeung and Ramasamy, 2008: 322). So, it is possible to say that brand value may have a significant impact on the financial performance of companies operating in both financial and real sectors. Therefore, it is important to determine the relationship between these variables and to choose the management strategies in parallel with the relationship between them.Some studies have been carried out in the literature regarding the relationship between these variables and some of these studies are listed below:

Akbulut and Paksoy (2007) aim to determine the relationship between brand value and various financial indicators such as market price, profit per share, net sales, interest and pre-tax profit, pre-tax profit and asset profitability in their studies. The results show that the variables used in the study have no effect on the brand value other than interest and pre-tax profit and pre-tax profit variables. *Yeung and Ramasamy (2008)*analyze the relationship between brand value and various financial performance indicators. In the study, which take into account the 2000-2005 period, 50 US companies are analyzed and the variables such as capital profitability, asset profitability, gross profit margin, net profit margin and pre-tax profit margin are used as a performance indicator. The results obtained from panel data analysis conclude that the profitability levels of companies with strong brand values are higher. To determine the relationship between consumer-based brand value and financial performance, *Aydin and Ulengin (2011)* evaluate 28 durable consumer goods companies operating in Turkey.In the study, various variables such as stock price return, market value/book value ratio, price/sales ratio, net profit margin, interest and pre-tax profit/net sales ratio, asset profitability, operating profit, current ratio, financial leverage ratio, net sales and market value are used as financial performance indicators. The results of multivariate

regression analysis show that consumer-based brand value positively affects the majority of financial performance indicators.

Hsu et al. (2013) determine whether strong brands are performing above S&P index returns and analyze the relationship between brand value and stock performance in the light of monthly data for the period of 2001-2010. Top 100 companies listed in the Global Most Valuable Brands are considered in the study and it is concluded that the stock performance of the companies analyzed show a performance above the index yield. Similarly, *Rasti and Gharibvand (2013)* analyze the effect of brand value on the book value, pre-tax profit levels and dividend returns of Malaysian companies. Multiple regression analysis is performed in the study covering the 2007-2009 period and the results show that the brand value has a positive effect on the financial indicators taken into consideration. Additionally, *Alper and Aydogan (2017)* analyze the impact of financial based brand value on firm performance. In the study of 2009-2016 periods, the brand value of 17 companies operating in the BIST Fabricated Metal Products, Machinery and Equipment sector is measured by Hirose method. The results obtained from the GMM panel data method show that there is a positive correlation between and the brand value and the asset profitability and the equity profitability variables, which are determined as the firm performance indicators.

2.   METHODOLOGY

In this study, the causality relationship between brand value and asset profitability levels of the food sector companies, which have been listed on the Brand Finance Turkey-100 over the last four years, is analyzed. The financial data of the companies discussed within the scope of the analysis are collected through the quarterly consolidated financial statements published on the firms' official websites and the data before 2009 are obtained from the Borsa Istanbul financial statements archive section. The reason why the period in question is considered on a quarter bases is that it is considered as a point that can determine the causality relationship between brand value and profitability more accurately and contribute to the originality of the study. In calculating the brand values, the Hirose method is used and panel causality analysis is applied to test the causality relationship between brand value and profitability in the light of the quarterly data obtained in the 2008-2018 period. The Hirose model is a brand valuation model developed by Brand Valuation Committee, an advisory body within the Ministry of Economy, Trade and industry of Japan (the chairman of the committee is Prof. Yoshikuni Hirose, Waseda University). In the Hirose model, an objective brand valuation model is developed by using the financial data obtained from annual reports of companies. In addition, although the methodology provided by the model is quite general, it is also used in the valuation of intangible assets as well as property, plant and equipment (Beccacece et al., 2002: 4). The Hirose model is used as an income-based approach and consists of three basic variables (Hirose et al., 2002: 10-15):

$$MD = f\{PD \text{ (price advantage)}, LD \text{ (customer loyalty)}, ED \text{ (brand expansion)}, r \}$$

$$BV = \frac{PD}{r} xLDXED$$
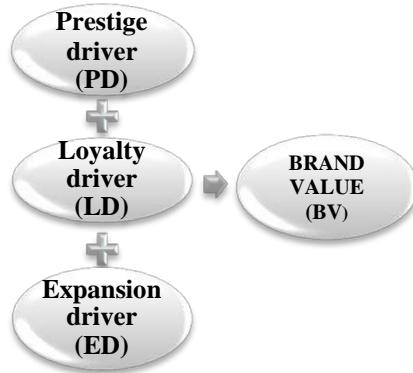
Figure 1. Brand Valuation Elements according to Hirose Method

In the prestige driver, there is a price premium and it is stated that companies have the opportunity to sell their products at higher prices than their competitors. The method of calculating the relevant variable is as follows:

$$PD = \frac{\left[\frac{1}{5}\sum_{i=-4}^{0}\left\{\left(\frac{S_i}{C_i} - \frac{S_i^*}{C_i^*}\right) \ x \ \frac{A_i}{OE_i}\right\} x C_0\right]}{r}$$

S_i : $Sales\ of\ the\ company\ for\ i\ period$
C_i : $Cost\ of\ sales\ of\ the\ company\ for\ i\ period$
S_i^* : $Sales\ of\ a\ benchmark\ company\ for\ i\ period$
C_i^* : $Cost\ of\ sales\ of\ a\ benchmark\ company\ for\ i\ period$
A_i : $Advertisement\ and\ promotion\ cost\ ratio\ of\ the\ company$
OE_i : $Operating\ costs\ of\ the\ company\ for\ i\ period$
C_0 : $Cost\ of\ sales\ of\ the\ company\ for\ the\ last\ period$
r : $risk\ free\ rate\ of\ interest$

It is assumed that the loyalty level of the customers to the products of the firms is high and the sales quantity is stable in loyalty driver. In the case of stability in the amount of sales, the volatility coefficient is close to zero and the value of the loyalty variable approaches one-to-one:

$$LD = \frac{\mu_C - \sigma_C}{\mu_C}$$

μ_C : $5 - year\ average\ of\ cost\ of\ sales$

σ_C : $Standard\ deviation\ of\ cost\ of\ sales$

In the expansion driver, high awareness level and brand expansion power are mentioned. In this driver, the geographical expansion power of the brand, the level of foreign sales and the level of transition to different sectors are linked to non-operational income:

$$ED = \frac{1}{2}\left\{\frac{1}{2}\sum_{i:1}^{0}\left(\frac{SO_i - SO_{i-1}}{SO_{i-1}} + 1\right) + \frac{1}{2}\sum_{i:1}^{0}\left(\frac{SX_i - SX_{i-1}}{SX_{i-1}} + 1\right)\right\}$$

SO_i : Overseas sales of the company for i period
SO_{i-1}: Overseas sales of the company for $i-1$ period
SX_i : Sales of non core business segments of the company for i period
SX_{i-1}: Sales of non − core business segments of the company for i 1 period

Since the accuracy of the information contained in the valuation is guaranteed by financial advisors or various financial authorities, the Hirose model is started to be used as a method with high reliability (Hirose, 2002: 23). In this study, the Hirose model is used due to the adoption of an income-based brand valuation approach and the evaluation in the light of financial data.

3.   FINDINGS

In this study, the causality relationship between brand value and asset profitability levels of food sector companies is analyzed. In the process of calculating the brand values, the Hirose method is used and panel causality analysis is applied in determining the causality relationship between brand value and asset profitability in the light of the quarterly data obtained in the 2008-2018 period. The financial data of the companies discussed within the scope of the analysis are accessed through the quarterly consolidated financial statements published on official websites and the data before 2009 and 2009 are obtained from the financial statements archive section of Borsa Istanbul. First of all, in the calculation of prestige variable, firm (s) whose sales or sales cost is the lowest should be selected among the firms discussed. In this study, the ratio of "sales/sales cost" is taken into consideration and since the period of study is considered in quarter period, the companies with the lowest values in terms of their respective values show a change in quarterly or yearly basis. In addition, due to the need for the last five-year data in the calculation of the prestige variable, the firms with the lowest "sales/sales cost" ratio are determined as of 2004. The list of companies to compare is shown in Table 1:

Table 1. The List of Benchmark Firms According to the Quarter Periods

Years	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
2004	TAT KONSERVE	TAT KONSERVE	TAT KONSERVE	TAT KONSERVE
2005	BANVIT	TAT KONSERVE	TAT KONSERVE	TAT KONSERVE
2006	TAT KONSERVE	TAT KONSERVE	TAT KONSERVE	TAT KONSERVE
2007	BANVIT	TAT KONSERVE	TAT KONSERVE	TAT KONSERVE
2008	TUKAS	TUKAS	TUKAS	TUKAS
2009	TUKAS	TUKAS	TUKAS	TUKAS
2010	TUKAS	TUKAS	TUKAS	PINAR ET
2011	TUKAS	TUKAS	TUKAS	TUKAS
2012	TUKAS	TUKAS	TUKAS	TUKAS
2013	BANVIT	TUKAS	BANVIT	BANVIT
2014	TUKAS	TUKAS	TUKAS	TUKAS
2015	BANVIT	BANVIT	BANVIT	BANVIT
2016	BANVIT	TUKAS	PINAR ET	PINAR ET
2017	PINAR ET	PINAR ET	PINAR ET	PINAR ET
2018	BANVIT	BANVIT	PINAR ET	PINAR ET

As it is understood from Table 1, Tat Konserve mostly has the lowest value in terms of the relevant ratio in the period 2004-2007 and Tukas mainly has the highest value after 2008. After the determination of the companies to be compared, the prestige variable is calculated. Since advertising and promotion expenses are not included as a separate item in the financial statements of many companies, marketing, sales and distribution expenses are used in the calculation of the prestige variable. In addition, due to the long calculation process and period interval, only the data of Pinar Su firm are presented in the Table 2 and the results of Pinar Sut, Kerevitas and Kent food firms are included in the Appendix Table 1-12:

Table 2. The First Step in Calculating the Prestige Driver of Pinar Su

PINAR SU		S_i/C_i (a)	S*/C* (b)	A_i/OE_i (c)	(a-b)	(a-b)xc
2004	1.quarter	1.32983	1.01375	0.47499	0.31608	0.15013
	2.quarter	1.39739	1.03336	0.93015	0.36402	0.3386
	3.quarter	1.48158	1.04541	0.52352	0.43618	0.22835
	4.quarter	1.33579	1.02784	0.5908	0.30795	0.18194
2005	1.quarter	1.29259	1.01761	0.54671	0.27499	0.15034
	2.quarter	1.35015	1.10637	0.58048	0.24378	0.14151
	3.quarter	1.57346	1.11728	0.69359	0.45618	0.3164
	4.quarter	1.61552	1.12429	0.70483	0.49123	0.34623
2006	1.quarter	1.57472	1.15446	0.47689	0.42027	0.20042
	2.quarter	1.52757	1.16901	0.50306	0.35856	0.18038
	3.quarter	1.52226	1.17991	0.54383	0.34235	0.18618
	4.quarter	1.4766	1.18788	0.53241	0.28872	0.15372
2007	1.quarter	1.49578	1.23328	0.51999	0.2625	0.1365
	2.quarter	1.53639	1.2311	0.51409	0.30529	0.15695
	3.quarter	1.59333	1.2211	0.50442	0.37223	0.18776
	4.quarter	1.62513	1.21578	0.50368	0.40935	0.20618
2008	1.quarter	1.76859	1.0623	0.61334	0.70629	0.43319
	2.quarter	1.56733	1.08455	0.57612	0.48279	0.27814
	3.quarter	1.51389	1.15054	0.53261	0.36334	0.19352
	4.quarter	1.49584	1.01512	0.5147	0.48072	0.24743
2009	1.quarter	1.4634	1.0674	0.36466	0.39599	0.1444
	2.quarter	1.45379	1.12309	0.42094	0.33071	0.13921
	3.quarter	1.48887	1.1833	0.45069	0.30557	0.13772
	4.quarter	1.46977	1.16061	0.44884	0.30917	0.13877
2010	1.quarter	1.93334	1.05542	0.6989	0.87792	0.61358
	2.quarter	1.91925	1.07901	0.70021	0.84024	0.58834
	3.quarter	2.0432	1.18182	0.73053	0.86138	0.62927
	4.quarter	2.00337	1.20461	0.71753	0.79876	0.57314
2011	1.quarter	1.84515	1.01035	0.7218	0.8348	0.60255
	2.quarter	1.80214	1.05365	0.70729	0.74849	0.5294
	3.quarter	1.85434	1.15671	0.71681	0.69762	0.50006
	4.quarter	1.84837	1.07231	0.7144	0.77606	0.55442
2012	1.quarter	1.96036	0.96359	0.69393	0.99677	0.69169
	2.quarter	1.97301	0.97773	0.71241	0.99527	0.70904
	3.quarter	2.01683	1.09606	0.72257	0.92078	0.66533
	4.quarter	1.87701	1.11214	0.76651	0.76487	0.58628
2013	1.quarter	1.76851	1.00949	0.74459	0.75902	0.56515
	2.quarter	1.77073	1.16012	0.7548	0.61061	0.46089
	3.quarter	1.75872	1.16778	0.77937	0.59095	0.46057
	4.quarter	1.68469	1.13596	0.76059	0.54873	0.41736
2014	1.quarter	1.65071	1.05638	0.77462	0.59432	0.46038
	2.quarter	1.72679	1.05884	0.77094	0.66795	0.51495
	3.quarter	1.77591	0.89687	0.77745	0.87904	0.6834
	4.quarter	1.75339	0.96347	0.77364	0.78992	0.61111

2015	1.quarter	1.97167	1.12154	0.74695	0.85013	0.63501
	2.quarter	2.00035	1.12977	0.76886	0.87058	0.66936
	3.quarter	1.97293	1.13694	0.76788	0.83599	0.64194
	4.quarter	1.90763	1.11818	0.7617	0.78945	0.60132
2016	1.quarter	1.79357	1.12154	0.71376	0.67203	0.47967
	2.quarter	1.68364	1.20864	0.73878	0.47499	0.35091
	3.quarter	1.73735	1.19873	0.74187	0.53861	0.39958
	4.quarter	1.66392	1.19839	0.75362	0.46553	0.35083
2017	1.quarter	1.70911	1.20818	0.68718	0.50094	0.34424
	2.quarter	1.6872	1.17416	0.71444	0.51303	0.36653
	3.quarter	1.73663	1.17422	0.73871	0.56241	0.41546
	4.quarter	1.78434	1.17791	0.73749	0.60643	0.44724
2018	1.quarter	1.80094	1.15445	0.70256	0.64648	0.45419
	2.quarter	1.76548	1.16558	0.74487	0.5999	0.44685
	3.quarter	1.75118	1.16145	0.76091	0.58974	0.44874

In the process of analyzing the causality relationship between the brand value and profitability, the relative data of the brand value are required. Therefore, in calculation of the prestige variable, proportional values are obtained considering the ratio of cost of sales/sales data for the last year (Bursali, 2009: 37). At this point, the difference in the cost of sales/sales ratio of the related firm and the benchmark firm is obtained as of 2004 and then the share of marketing sales and distribution expenses in operating expenses are multiplied. The average of the value obtained for the last five years is calculated by multiplying the cost of sales/sales ratio for the last year:

Table 3. The Second Step in Calculating the Prestige Driver of Pinar Su

PINAR SU		C_i/S_i (d)	[(a-b)xc]/5 (e)	PD (d x e)
2008	1. quarter	0.56542	0.21412	0.12107
	2. quarter	0.63803	0.21911	0.13980
	3. quarter	0.66055	0.22244	0.14693
	4. quarter	0.66852	0.22710	0.15182
2009	1. quarter	0.68334	0.21297	0.14553
	2. quarter	0.68786	0.17924	0.12329
	3. quarter	0.67165	0.20432	0.13723
	4. quarter	0.68038	0.21847	0.14864
2010	1. quarter	0.51724	0.30562	0.15808
	2. quarter	0.52104	0.26860	0.13995
	3. quarter	0.48943	0.26689	0.13062
	4. quarter	0.49916	0.26385	0.13170
2011	1. quarter	0.54196	0.38605	0.20922
	2. quarter	0.55489	0.33841	0.18778
	3. quarter	0.53928	0.32967	0.17778
	4. Quarter	0.54102	0.34399	0.18610
2012	1. quarter	0.51011	0.49708	0.25357
	2. quarter	0.50684	0.44883	0.22748
	3. quarter	0.49583	0.42518	0.21081
	4. quarter	0.53276	0.42001	0.22376
2013	1. quarter	0.56545	0.52347	0.29600
	2. quarter	0.56474	0.48538	0.27411
	3. quarter	0.56859	0.47859	0.27212
	4. quarter	0.59358	0.45399	0.26948
2014	1. quarter	0.60580	0.58667	0.35541
	2. quarter	0.57911	0.56052	0.32460
	3. quarter	0.56309	0.58773	0.33094

	4. quarter	0.57032	0.54846	0.31280
2015	1. quarter	0.50718	0.59096	0.29972
	2. quarter	0.49991	0.57673	0.28831
	3. quarter	0.50686	0.59026	0.29918
	4. quarter	0.52421	0.55410	0.29046
2016	1. quarter	0.55755	0.56638	0.31578
	2. quarter	0.59395	0.54103	0.32135
	3. quarter	0.57559	0.57016	0.32818
	4. quarter	0.60099	0.51338	0.30854
2017	1. quarter	0.58510	0.49689	0.29073
	2. quarter	0.59270	0.47253	0.28007
	3. quarter	0.57583	0.52019	0.29954
	4. quarter	0.56043	0.48557	0.27213
2018	1. quarter	0.55527	0.47470	0.26358
	2. quarter	0.56642	0.46972	0.26606
	3. quarter	0.57104	0.51782	0.29570

The second step in the calculation of the brand value according to the Hirose method is to calculate the loyalty driver. At this point, the average and standard deviation of the cost of sales over the last five years are calculated and the values for the loyalty driverare shown in Table 4:

Table 4. Calculation of the Loyalty Driver of Pinar Su

Cost of Sales		**2004**	**2005**	**2006**	**2007**
1. quarter		3.365.470	4.047.132	5.360.909	8.806.584
2. quarter		4.540.114	9.923.075	14.475.244	20.055.897
3. quarter		5.351.224	21.937.364	25.492.157	30.655.346
4. quarter		19.335.973	27.126.604	32.900.583	37.271.850

Pinar Su		**Cost of Sales**	**Five-Year Average of Cost of Sales**	**Standard Deviation of Cost of Sales**	**Loyalty Driver**
2008	1. quarter	7.378.559	5.791.731	2.035.846	0.6485
	2. quarter	19.914.716	13.781.809	5.962.488	0.5674
	3. quarter	32.951.372	23.277.493	9.757.750	0.5808
	4. quarter	40.891.459	31.505.294	7.623.193	0.7580
2009	1. quarter	7.987.305	6.716.098	1.754.131	0.7388
	2. quarter	19.516.430	16.777.072	4.009.371	0.7610
	3. quarter	30.082.952	28.223.838	3.967.366	0.8594
	4. quarter	37.217.559	35.081.611	4.714.929	0.8656
2010	1. quarter	8.102.865	7.527.244	1.174.293	0.8440
	2. quarter	17.338.554	18.260.168	2.131.450	0.8833
	3. quarter	27.656.437	29.367.653	2.567.512	0.9126
	4. quarter	34.434.493	36.543.189	2.742.566	0.9249
2011	1. quarter	9.050.692	8.265.201	599.967	0.9274
	2. quarter	21.080.545	19.581.228	1.234.363	0.9370
	3. quarter	34.234.562	31.116.134	2.295.299	0.9262
	4. quarter	42.696.058	38.502.284	2.932.825	0.9238
2012	1. quarter	10.203.653	8.544.615	987.314	0.8845
	2. quarter	23.950.150	20.360.079	2.165.520	0.8936
	3. quarter	39.386.762	32.862.417	3.982.096	0.8788
	4. quarter	53.112.036	41.670.321	6.399.311	0.8464
2013	1. quarter	13.818.641	9.832.631	2.146.377	0.7817
	2. quarter	31.644.687	22.706.073	4.961.310	0.7815
	3. quarter	52.414.023	36.754.947	8.783.893	0.7610
	4. quarter	65.243.248	46.540.679	11.324.577	0.7567
2014	1. quarter	17.708.622	11.776.895	3.542.877	0.6992
	2. quarter	37.476.571	26.298.101	7.301.417	0.7224
	3. quarter	60.294.328	42.797.222	11.940.061	0.7210

	4. quarter	75.387.129	54.174.593	14.798.947	0.7268
2015	**1. quarter**	16.422.934	13.440.908	3.376.459	0.7488
	2. quarter	34.924.967	29.815.384	6.306.288	0.7885
	3. quarter	59.918.335	49.249.602	10.663.474	0.7835
	4. quarter	75.741.973	62.436.089	12.878.377	0.7937
2016	**1. quarter**	19.569.236	15.544.617	3.260.577	0.7902
	2. quarter	47.421.203	35.083.516	7.664.826	0.7815
	3. quarter	75.482.750	57.499.240	11.755.785	0.7955
	4. quarter	98.536.814	73.604.240	14.961.407	0.7967
2017	**1. quarter**	25.148.252	18.533.537	3.799.803	0.7950
	2. quarter	58.887.417	42.070.969	9.922.692	0.7641
	3. quarter	94.391.890	68.500.265	14.959.181	0.7816
	4. quarter	111.128.901	85.207.613	16.936.333	0.8012
2018	**1. quarter**	25.784.520	20.926.713	3.844.543	0.8163
	2. quarter	63.047.164	48.351.464	11.192.582	0.7685
	3. quarter	108.636.078	79.744.676	19.177.163	0.7595

In light of the obtained findings of loyalty driver, especially the related data of Kent Gida is observed to be around 90% in the period covered, while other firms are observed to be between 60% and 80% (see Appendix Table 7-9). At this point, it is possible to express that the loyalty levels of the customers of the relevant companies are high. According to the Hirose method, before the last phase of the brand valuation process, the expansion driver is calculated and foreign sales and non-operating revenues are taken into account. The calculations for the relevant variable are shown in Table 5:

Table 5. Calculation of the Expansion Driver of Pinar Su

Pinar Su		OverseasSales (SO)	Sales of Non-Core Business Segments (SX)	$(SO_i-SO_{i-1})/SO_{i-1})$ (a)	$(SX_i-SX_{i-1})/SX_{i-1})$ (b)	(a+1)	(b+1)	$(a+1)/2$ (c)	$(b+1)/2$ (d)	(c+d)	ED $[(c+d)/2]$
2007	**1. quarter**	1.924.448	346.181	1.549	-0.095	2.549	0.905	1.274	0.453	1.727	0.864
	2. quarter	3.304.795	1.739.238	0.691	-0.230	1.691	0.770	0.846	0.385	1.231	0.615
	3. quarter	3.904.945	2.917.030	0.158	0.041	1.158	1.041	0.579	0.521	1.100	0.550
	4. quarter	4.978.101	3.482.730	0.186	0.011	1.186	1.011	0.593	0.506	1.099	0.549
2008	**1. quarter**	921.654	1.187.28	-0.521	-0.657	0.479	0.343	0.239	0.171	0.411	0.205
	2. quarter	2.571.095	130.607	-0.222	-0.925	0.778	0.075	0.389	0.038	0.427	0.213
	3. quarter	3.146.979	301.980	-0.194	-0.896	0.806	0.104	0.403	0.052	0.455	0.227
	4. quarter	3.852.151	581.584	-0.226	-0.833	0.774	0.167	0.387	0.083	0.470	0.235
2009	**1. quarter**	931.516	31.668	0.011	-0.733	1.011	0.267	0.505	0.133	0.639	0.319
	2. quarter	2.247.258	305.162	-0.126	1.336	0.874	2.336	0.437	1.168	1.605	0.803
	3. quarter	3.166.702	411.294	0.006	0.362	1.006	1.362	0.503	0.681	1.184	0.592
	4. quarter	3.874.472	463.864	0.006	-0.202	1.006	0.798	0.503	0.399	0.902	0.451
2010	**1. quarter**	1.010.249	1.274.368	0.085	39.242	1.085	40.24	0.542	20.121	20.663	10.332
	2. quarter	2.265.205	1.342.458	0.008	3.399	1.008	4.399	0.504	2.200	2.704	1.352
	3. quarter	3.135.858	1.427.973	-0.010	2.472	0.990	3.472	0.495	1.736	2.231	1.116
	4. quarter	3.446.161	1.554.065	-0.111	2.350	0.889	3.350	0.445	1.675	2.120	1.060
2011	**1. quarter**	1.166.364	1.535.083	0.155	0.205	1.155	1.205	0.577	0.602	1.180	0.590
	2. quarter	2.833.916	3.370.700	0.251	1.511	1.251	2.511	0.626	1.255	1.881	0.940
	3. quarter	4.017.194	3.389.062	0.281	1.373	1.281	2.373	0.641	1.187	1.827	0.914
	4. quarter	5.008.222	3.582.279	0.453	1.305	1.453	2.305	0.727	1.153	1.879	0.940
2012	**1. quarter**	1.638.381	812.423	0.405	-0.471	1.405	0.529	0.702	0.265	0.967	0.483
	2. quarter	3.745.977	943.811	0.322	-0.720	1.322	0.280	0.661	0.140	0.801	0.400
	3. quarter	5.760.143	973.585	0.434	-0.713	1.434	0.287	0.717	0.144	0.861	0.430
	4. quarter	7.730.934	1.082.634	0.544	-0.698	1.544	0.302	0.772	0.151	0.923	0.461
2013	**1. quarter**	1.727.870	618.629	0.055	-0.239	1.055	0.761	0.527	0.381	0.908	0.454

	2. quarter	3.685.448	7.194	-0.016	-0.992	0.984	0.008	0.492	0.004	0.496	0.248
	3. quarter	6.420.290	30.089	0.115	-0.969	1.115	0.031	0.557	0.015	0.573	0.286
	4. quarter	7.872.693	361.754	0.018	-0.666	1.018	0.334	0.509	0.167	0.676	0.338
2014	**1. quarter**	3.080.179	19.793	0.783	-0.968	1.783	0.032	0.891	0.016	0.907	0.454
	2. quarter	6.609.991	480.488	0.794	65.790	1.794	66.79	0.897	33.395	34.292	17.146
	3. quarter	9.907.816	585.640	0.543	18.464	1.543	19.46	0.772	9.732	10.503	5.252
	4. quarter	12.352.043	770.366	0.569	1.130	1.569	2.130	0.784	1.065	1.849	0.925
2015	**1. quarter**	3.603.837	420.728	0.170	20.256	1.170	21.25	0.585	10.628	11.213	5.607
	2. quarter	7.219.519	615.245	0.092	0.280	1.092	1.280	0.546	0.640	1.186	0.593
	3. quarter	11.591.244	875.761	0.170	0.495	1.170	1.495	0.585	0.748	1.333	0.666
	4. quarter	14.559.880	654.677	0.179	-0.150	1.179	0.850	0.589	0.425	1.014	0.507
2016	**1. quarter**	4.062.846	340.834	0.127	-0.190	1.127	0.810	0.564	0.405	0.969	0.484
	2. quarter	8.774.781	577.811	0.215	-0.061	1.215	0.939	0.608	0.470	1.077	0.539
	3. quarter	13.456.124	1.740.547	0.161	0.987	1.161	1.987	0.580	0.994	1.574	0.787
	4. quarter	17.513.425	1.770.358	0.203	1.704	1.203	2.704	0.601	1.352	1.954	0.977
2017	**1. quarter**	5.983.976	648.299	0.473	0.902	1.473	1.902	0.736	0.951	1.687	0.844
	2. quarter	11.494.909	1.108.859	0.310	0.919	1.310	1.919	0.655	0.960	1.615	0.807
	3. quarter	16.842.578	1.930.810	0.252	0.109	1.252	1.109	0.626	0.555	1.180	0.590
	4. quarter	17.710.073	2.419.143	0.011	0.366	1.011	1.366	0.506	0.683	1.189	0.594
2018	**1. quarter**	6.012.793	736.798	0.005	0.137	1.005	1.137	0.502	0.568	1.071	0.535
	2. quarter	15.351.546	3.343.935	0.336	2.016	1.336	3.016	0.668	1.508	2.176	1.088
	3. quarter	25.030.151	6.414.357	0.486	2.322	1.486	3.322	0.743	1.661	2.404	1.202

According to the Hirose method, the brand value is obtained by multiplying the prestige, loyalty and expansion drivers. Proportional values are obtained by considering the cost of sales/sales data for the last year in calculating the prestige driver, because the proportional data of brand value are required during the analysis of causality relationship between brand value and profitability. The proportional brand values of the four firms are shown in Table 6:

Table 6. Brand Values Obtained by Hirose Method

BRAND VALUE		PINAR SU	PINAR SUT	KEREVITAS	KENT GIDA
2008	**1.quarter**	0.01613	0.01958	0.02518	0.07021
	2.quarter	0.01692	0.01608	0.02394	0.05716
	3.quarter	0.01940	0.01146	0.00949	0.05028
	4.quarter	0.02707	0.01687	0.04951	0.04893
2009	**1.quarter**	0.03434	0.03115	0.06183	0.06810
	2.quarter	0.07531	0.02374	0.05709	0.03470
	3.quarter	0.06983	0.01639	0.11028	0.05596
	4.quarter	0.05801	0.01853	0.05350	0.10297
2010	**1.quarter**	1.37840	0.03088	0.04975	0.04103
	2.quarter	0.16710	0.04329	0.05805	0.04164
	3.quarter	0.13298	0.02116	0.13260	0.03311
	4.quarter	0.12912	0.01992	0.14352	0.03992
2011	**1.quarter**	0.11444	0.03634	0.15119	0.04353
	2.quarter	0.16547	0.03095	0.12478	0.53630
	3.quarter	0.15044	0.01679	0.03413	0.29539
	4.quarter	0.16154	0.02475	0.04304	0.23766
2012	**1.quarter**	0.10843	0.06792	0.17255	0.08963
	2.quarter	0.08141	0.04337	0.12226	0.06279
	3.quarter	0.07972	0.02059	0.08174	0.06203
	4.quarter	0.08740	0.02534	0.06775	0.04634
2013	**1.quarter**	0.10505	0.04609	0.08204	0.21908
	2.quarter	0.05310	0.02328	0.12019	0.04298

	3.quarter	0.05931	0.01386	0.09657	0.03788
	4.quarter	0.06895	0.01963	0.14218	0.05583
2014	**1.quarter**	0.11273	0.06127	0.25272	0.09830
	2.quarter	1.02040	0.05193	0.05739	0.07650
	3.quarter	1.25313	0.03692	0.04853	0.07781
	4.quarter	0.21022	0.03313	0.06236	0.03616
2015	**1.quarter**	1.25829	0.05886	0.19726	0.07009
	2.quarter	0.13485	0.03274	0.37836	0.08513
	3.quarter	0.15619	0.03630	0.20816	0.09379
	4.quarter	0.11692	0.02959	0.10292	0.47642
2016	**1.quarter**	0.12087	0.03091	0.04670	0.06537
	2.quarter	0.13528	0.02027	0.04478	0.08417
	3.quarter	0.20550	0.01841	0.05924	0.07670
	4.quarter	0.24011	0.02561	0.06863	0.07340
2017	**1.quarter**	0.19501	0.07884	0.07250	0.07333
	2.quarter	0.17276	0.02991	0.05998	0.07287
	3.quarter	0.13819	0.02741	0.07326	0.08368
	4.quarter	0.12961	0.01880	-0.04228	0.07603
2018	**1.quarter**	0.11518	0.01973	-0.02986	0.07685
	2.quarter	0.22242	0.02263	-0.00311	0.10717
	3.quarter	0.26997	0.04390	0.00875	0.14915

Following the determination of the brand values of four companies analyzed within the scope of the analysis, the return on assets (ROA) ratio is calculated and shown in Table 7:

Table 7. Return on Assets Ratio of the Analyzed Firms

	ROA	**PINAR SU**	**PINAR SUT**	**KEREVITAS**	**KENT GIDA**
2008	**1.quarter**	0.028715	0.0146	-0.0561	-0.00164
	2.quarter	0.040941	0.044009	-0.0099	0.017379
	3.quarter	0.077202	0.063068	0.004596	0.038771
	4.quarter	0.067616	0.080578	-0.17603	0.046341
2009	**1.quarter**	0.00904	0.035168	0.019818	0.001731
	2.quarter	0.036481	0.070786	0.131958	0.002627
	3.quarter	0.067879	0.098233	0.147362	0.038485
	4.quarter	0.067955	0.120658	0.136805	0.007451
2010	**1.quarter**	0.016193	0.036162	0.021712	-0.02735
	2.quarter	0.029688	0.067259	0.003384	-0.04322
	3.quarter	0.047944	0.099783	0.081845	-0.03395
	4.quarter	0.03954	0.112798	0.014507	-0.04685
2011	**1.quarter**	0.013558	0.033607	0.017101	-0.02506
	2.quarter	0.00835	0.079566	-0.00692	0.005239
	3.quarter	0.010314	0.100213	-0.07247	0.036182
	4.quarter	0.008461	0.116565	-0.10993	0.010219
2012	**1.quarter**	0.004296	0.025389	0.030389	-0.0003
	2.quarter	0.005669	0.043018	0.003954	0.064432
	3.quarter	0.019862	0.068641	0.005708	0.058713
	4.quarter	0.000975	0.088847	-0.00326	0.030166
2013	**1.quarter**	0.006722	0.024751	0.01015	-0.01791
	2.quarter	0.00785	0.050612	-0.03807	0.010203
	3.quarter	0.000055	0.070389	-0.0818	-0.01096
	4.quarter	-0.06652	0.098695	-0.11834	-0.02918
2014	**1.quarter**	-0.01809	0.029542	-0.01849	-0.0237
	2.quarter	-0.01751	0.050371	-0.00049	0.008382
	3.quarter	-0.01442	0.072254	-0.03819	0.014191

	4.quarter	0.017669	0.111624	-0.04148	0.039584
2015	**1.quarter**	-0.00322	0.029107	-0.06813	0.010582
	2.quarter	-0.01724	0.03972	-0.09221	0.051778
	3.quarter	-0.01283	0.047611	-0.14223	0.084174
	4.quarter	-0.06016	0.070422	-0.12886	0.086131
2016	**1.quarter**	0.006743	0.027666	-0.01305	-0.00346
	2.quarter	-0.04104	0.046929	-0.03696	0.003738
	3.quarter	-0.06145	0.060523	-0.05596	0.001942
	4.quarter	-0.10403	0.064289	-0.12197	-0.02876
2017	**1.quarter**	-0.01953	0.024232	-0.03528	0.01169
	2.quarter	-0.03436	0.029451	-0.0751	0.03487
	3.quarter	-0.03626	0.034308	-0.09975	0.038986
	4.quarter	-0.07983	0.039185	0.019634	0.066517
2018	**1.quarter**	-0.02792	0.01684	-0.00278	0.027669
	2.quarter	-0.03741	0.019689	-0.02042	0.063988
	3.quarter	-0.03239	0.007329	-0.05322	0.10297

After determining the financial brand values and asset profitability levels, the causality relationship betweenthese two variables is analyzed by panel causality test.Firstly, it is tested whether there is a cross-sectional dependency. Cross-sectional dependency refers to the fact that the units forming the panel are affected to a different degree by a shock to the units forming the panel. At this point, the analyses to be made by considering the cross-sectional dependency will be defective and consistent. For this reason, Breusch and Pagan (1980) LM (Lagrange Multiplier) test, CD (Cross-sectional dependency) ve CDLM tests developed by Pesaran (2004) and LMadj (Bias-Adjusted Cross Sectional Dependence Lagrange Multiplier) developed by Pesaran et al. (2008) is used to determine whether there is a dependency between the cross sections used in the study. The results of the cross-sectional dependency test for the brand value and the return on assets series are shown in Table 8:

Table 8. Tests of Cross-Sectional Dependency

VARIABLES	LM Test	CD_{LM} Test	CD Test	LM_{adj} Test
Return on Assets	26.91 (0.00)	6.03 (0.00)	-4.21 (0.00)	5.22(0.00)
Brand Value	40.13 (0.00)	9.85 (0.00)	-3.59 (0.00)	0.46 (0.32)

The null hypothesis of the tests in Table 8 is the non-existence of cross-sectional dependency. According to the test results, the null hypothesis of no cross section dependence is rejected for the variable of return on assets and the similar results are also obtained for brand value variable except for LM_{adj} test. Therefore, it is concluded that there is a cross-sectional dependency for both variables. This result requires the use of the methods that take into account the cross-sectional dependency in the following stages.

In order to determine the causality relationship between the financial brand value and the asset profitability variables, the stationary of these variables should be also tested. Due to the cross-sectional dependency, the stationary test of the series is investigated by Hadri-Kurozumi (2012) which is one of the second generation panel unit root tests.According to Hadri-Kurozumi (2012); the null hypothesis is that the series are stationary. The obtained results are presented in Table 9.

Table 9. Hadri-Kurozumi (2012) Panel Unit Root Test Results

Statistics		p-value
Brand Value		
Z_A^{SPC}	0.4445	0.3283
Z_A^{LA}	1.2974	0.0973*
Return on Assets		
Z_A^{SPC}	-0.7206	0.7644
Z_A^{LA}	-0.8138	0.7921

When examined the panel unit root test results showed in Table 9; the null hypothesis of stationary cannot be rejected for both the variables of brand value and return on assets. After determining that the series are stationary at level, the potential causality relationship between brand value and return on assets is investigated by Emirmahmutoğlu-Köse (2011) and Dumitrescu-Hurlin (2012) panel causality tests and the findings are shown in Table 10:

Table 10: Panel Causality Analysis Test Results

Emirmahmutoglu and Kose (2011)		
	Asy. p-Value	Boostrap p-Value
Return on Assets does not cause Brand Value	0.234	0.728
Brand Value does not cause Return on Assets	0.03	0.023*
C		
	Zwald p-Value	Zwtilde p- Value
Return on Assets does not cause Brand Value	0.232	0.381
Brand Value does not cause Return on Assets	0.024	0.075**

Note: The stationary of the variables (Return on Assets and Brand Value) is investigated by Hadri-Kurozumi (2012) and Pesaran (2007) unit root tests and found stationary at level. Also, series checked homogeneity tests by Pesaran and Yamagata Delta Test (2008) and cross-sectional dependence tests (Breusch, Pagan (1980); Pesaran, (2004), Pesaran et.all (2008). Cross sectional dependence and heterogeneity exist for Variables.

According to the results of Emirmahmutoglu and Kose (2011); it is concluded that the null hypothesis of 'brand value does not cause return on assets' is rejected at %5 significance level. Brand value causes return on assets, while return on assets does not cause brand value. The results of Dumitrescu and Hurlin (2012) also support the findings of Emirmahmutoglu and Kose (2011).So it is possible to say that there is a unidirectionalcausality relationship from brand value to profitability.

4.   CONCLUSION

The aim of this study is to determine whether there is a causal relationship between the financial-based brand values and the asset profitability levels of the food sector companies listed on Brand Finance Turkey-100 list. In order to achieve this purpose, 43-quarter time series data are evaluated in the analysis between 2008 and 2018. At this point, Hirose method, which is an objective brand valuation model that takes into account the financial data, is considered and panel causality test is used in order to analyze the causality relationship. The conditions required by the Hirose method used in measuring the financial-based brand value,

except for some restrictions, are fully fulfilled. Firstly, the data of 8 firms are calculated in the analysis, but 4 companies are included in the analysis due to the fact that the lowest sales/sales cost ratio varies considerably in the relevant years due to the quarterly periods. When a general evaluation of the prestige variable is made from the components of the model, it is possible to state that the firms that are dealt with have a high potential for creating brand value. When the expansion variable, which takes into account the non-operating income and foreign sales, is considered, it is understood that the increase in the export levels of the companies contributed to the international recognition level positively. According to the causality test results, it is seen that brand value is the cause of asset profitability for the analyzed firms over the period of 2008Q1:2018Q3.

From the analysis, it is possible to say that each firm should increase its brand value, if they want to provide the stability on growth and profitability. At this point, brand value may increase firm profitability by contributing to generate efficient competition strategies. Additionally, high profitability may be related to the number of loyal customers and the preference of the brand. If companies manage these elements effectively and reflect this efficiency on prices, the profitability levels of firms gradually increase. This study is one of the comprehensive quantitative studies in the field of branding and profitability. There has been limited research on the impact of brand value on the financial performance. So this study may provide new insights for marketing or finance managers and brand valuation agencies.

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APPENDIX

Table 1-The First Step in Calculating the Prestige Driverof Pinar Sut

PINAR SUT		S_i/C_i (a)	S^*/C^* (b)	A_i/OE_i (c)	(a-b)	(a-b)xc
2004	1.quarter	1.2029855	1.0137519	0.4887064	0.1892336	0.0924797
	2.quarter	1.2066771	1.0333628	0.6356741	0.1733143	0.1101714
	3.quarter	1.1897342	1.045408	0.629823	0.1443263	0.0909
	4.quarter	1.1935643	1.0278436	0.6178717	0.1657208	0.1023942
2005	1.quarter	1.2568878	1.0176058	0.5847862	0.239282	0.1399288
	2.quarter	1.2837515	1.1063669	0.6079266	0.1773846	0.1078368
	3.quarter	1.2754574	1.1172782	0.6606105	0.1581792	0.1044949
	4.quarter	1.2738847	1.1242919	0.6728028	0.1495928	0.1006465
2006	1.quarter	1.2499858	1.1544555	0.7254653	0.0955302	0.0693039
	2.quarter	1.2518191	1.1690071	0.7343568	0.082812	0.0608136
	3.quarter	1.2277442	1.1799129	0.7138904	0.0478312	0.0341462
	4.quarter	1.2375398	1.1878834	0.68834	0.0496565	0.0341805
2007	1.quarter	1.3175751	1.2332809	0.6177283	0.0842943	0.0520709
	2.quarter	1.2854407	1.2311024	0.6378588	0.0543384	0.0346602
	3.quarter	1.2629994	1.2210967	0.6309592	0.0419026	0.0264388
	4.quarter	1.251525	1.2157788	0.5743967	0.0357462	0.0205325
2008	1.quarter	1.2298501	1.0622994	0.5446273	0.1675507	0.0912527
	2.quarter	1.2435064	1.0845453	0.5623706	0.1589611	0.0893951
	3.quarter	1.2260012	1.1505417	0.5340425	0.0754595	0.0402986

		4.quarter	1.2277117	1.0151231	0.4846489	0.2125886	0.1030308

		S_i/C_i (a)	$S*/C*$ (b)	A_i/OE_i (c)	(a-b)	(a-b)xc
2009	1.quarter	1.3602832	1.0674046	0.4588143	0.2928786	0.1343769
	2.quarter	1.3358588	1.1230884	0.5304378	0.2127704	0.1128615
	3.quarter	1.3116527	1.1832993	0.5372436	0.1283535	0.0689571
	4.quarter	1.2850446	1.1606055	0.4886089	0.124439	0.060802
2010	1.quarter	1.2278292	1.0554196	0.4145065	0.1724096	0.0714649
	2.quarter	1.2198026	1.0790137	0.469491	0.1407889	0.0660991
	3.quarter	1.2430996	1.1818179	0.4867202	0.0612817	0.029827
	4.quarter	1.2193963	1.204607	0.5308046	0.0147893	0.0078502
2011	1.quarter	1.2938448	1.0103515	0.4915994	0.2834932	0.1393651
	2.quarter	1.2755427	1.053651	0.4912008	0.2218916	0.1089934
	3.quarter	1.2525215	1.1567136	0.5233792	0.0958079	0.0501438
	4.quarter	1.2585995	1.0723133	0.5180813	0.1862861	0.0965114
2012	1.quarter	1.2620182	0.9635876	0.6185719	0.2984306	0.1846008
	2.quarter	1.2324695	0.9777309	0.5815549	0.2547387	0.1481445
	3.quarter	1.2237118	1.0960592	0.5783459	0.1276526	0.0738273
	4.quarter	1.2490381	1.1121377	0.5649732	0.1369004	0.077345
2013	1.quarter	1.2828648	1.0094943	0.586974	0.2733705	0.1604614
	2.quarter	1.2628932	1.1601224	0.639085	0.1027707	0.0656792
	3.quarter	1.2406249	1.1677755	0.6226381	0.0728494	0.0453588
	4.quarter	1.2289443	1.1359601	0.5642087	0.0929842	0.0524625
2014	1.quarter	1.230338	1.0563818	0.5865539	0.1739562	0.1020347
	2.quarter	1.2075357	1.0588403	0.5899082	0.1486953	0.0877166
	3.quarter	1.200981	0.8968718	0.5766663	0.3041092	0.1753695
	4.quarter	1.20148	0.96347	0.5563659	0.2380101	0.1324207
2015	1.quarter	1.2305975	1.1215392	0.5709602	0.1090583	0.0622679
	2.quarter	1.2013835	1.1297689	0.5488952	0.0716147	0.039309
	3.quarter	1.1882418	1.136945	0.5211495	0.0512968	0.0267333
	4.quarter	1.191361	1.1181798	0.5425702	0.0731812	0.039706
2016	1.quarter	1.247179	1.1215392	0.5742298	0.1256398	0.0721461
	2.quarter	1.2405834	1.2086437	0.5774729	0.0319397	0.0184443
	3.quarter	1.2215162	1.1987343	0.5586601	0.0227819	0.0127273
	4.quarter	1.2180015	1.1983919	0.551887	0.0196096	0.0108223
2017	1.quarter	1.2311711	1.2081775	0.5497861	0.0229936	0.0126416
	2.quarter	1.2160607	1.1741647	0.6120369	0.041896	0.0256419
	3.quarter	1.1878284	1.1742245	0.6004845	0.0136038	0.0081689
	4.quarter	1.1885908	1.1779096	0.6031234	0.0106812	0.0064421
2018	1.quarter	1.2229756	1.1544524	0.6318339	0.0685232	0.0432953
	2.quarter	1.2045881	1.1655809	0.6199772	0.0390072	0.0241836
	3.quarter	1.184602	1.1614497	0.5925413	0.0231523	0.0137187

Table 2-The First Step in Calculating the Prestige Driverof Kerevitas

KEREVITAS		S_i/C_i (a)	$S*/C*$ (b)	A_i/OE_i (c)	(a-b)	(a-b)xc
2004	1.quarter	1.4668682	1.0137519	0.7128265	0.4531163	0.3229933
	2.quarter	1.5202421	1.0333628	0.7270461	0.4868793	0.3539837
	3.quarter	1.4917426	1.045408	0.7461354	0.4463346	0.3330261
	4.quarter	1.4212414	1.0278436	0.7445817	0.3933979	0.2929169
2005	1.quarter	1.5706475	1.0176058	0.7128266	0.5530418	0.3942229
	2.quarter	1.6071066	1.1063669	0.727046	0.5007397	0.3640608
	3.quarter	1.6274955	1.1172782	0.7461353	0.5102174	0.3806912
	4.quarter	1.6250049	1.1242919	0.7445817	0.500713	0.3728217
2006	1.quarter	1.5798713	1.1544555	0.7128265	0.4254158	0.3032477
	2.quarter	1.6450234	1.1690071	0.727046	0.4760163	0.3460857
	3.quarter	1.6518972	1.1799129	0.7461353	0.4719842	0.3521641
	4.quarter	1.679075	1.1878834	0.7445817	0.4911917	0.3657323
2007	1.quarter	1.6500901	1.2332809	0.7128264	0.4168093	0.2971126
	2.quarter	1.5806411	1.2311024	0.727046	0.3495388	0.2541308
	3.quarter	1.541654	1.2210967	0.7461353	0.3205572	0.2391791
	4.quarter	1.5510817	1.2157788	0.7905706	0.3353029	0.2650806
2008	1.quarter	1.460342	1.0622994	0.7706235	0.3980426	0.306741

	2.quarter	1.3862363	1.0845453	1.3834223	0.301691	0.417366
	3.quarter	1.3877281	1.1505417	0.7783313	0.2371864	0.1846096
	4.quarter	1.378078	1.0151231	0.7699909	0.3629549	0.279472
2009	1.quarter	1.5079107	1.0674046	0.704241	0.4405061	0.3102225
	2.quarter	1.4555314	1.1230884	0.7606501	0.332443	0.2528728
	3.quarter	1.4024026	1.1832993	0.7900373	0.2191034	0.1730998
	4.quarter	1.4162035	1.1606055	0.755818	0.255598	0.1931856
2010	1.quarter	1.4017769	1.0554196	0.7469463	0.3463573	0.2587103
	2.quarter	1.3737807	1.0790137	0.7548765	0.2947671	0.2225127
	3.quarter	1.381589	1.1818179	0.7865142	0.1997711	0.1571228
	4.quarter	1.3775	1.204607	0.7555748	0.172893	0.1306336
2011	1.quarter	1.3976472	1.0103515	0.8351288	0.3872957	0.3234417
	2.quarter	1.3807122	1.053651	0.8118699	0.3270612	0.2655311
	3.quarter	1.3590934	1.1567136	0.7830376	0.2023798	0.158471
	4.quarter	1.3489955	1.0723133	0.76186	0.2766821	0.210793
2012	1.quarter	1.3301949	0.9635876	0.6251106	0.3666073	0.2291701
	2.quarter	1.3187127	0.9777309	0.6579566	0.3409818	0.2243512
	3.quarter	1.338642	1.0960592	0.6809342	0.2425828	0.1651829
	4.quarter	1.3634328	1.1121377	0.6949987	0.251295	0.1746497
2013	1.quarter	1.5196557	1.0094943	0.7331196	0.5101614	0.3740093
	2.quarter	1.4198944	1.1601224	0.6934489	0.259772	0.1801386
	3.quarter	1.3907518	1.1677755	0.6997761	0.2229763	0.1560335
	4.quarter	1.3841452	1.1359601	0.7081673	0.2481851	0.1757566
2014	1.quarter	1.4158519	1.0563818	0.677934	0.3594701	0.243697
	2.quarter	1.4020857	1.0588403	0.7618249	0.3432453	0.2614928
	3.quarter	1.3902355	0.8968718	0.7586517	0.4933637	0.3742912
	4.quarter	1.3935454	0.96347	0.7130727	0.4300754	0.3066751
2015	1.quarter	1.434729	1.1215392	0.4566783	0.3131898	0.143027
	2.quarter	1.3874714	1.1297689	0.533901	0.2577026	0.1375877
	3.quarter	1.4051729	1.136945	0.5632866	0.2682279	0.1510892
	4.quarter	1.382215	1.1181798	0.5870946	0.2640352	0.1550136
2016	1.quarter	1.3039334	1.1215392	0.6919441	0.1823942	0.1262066
	2.quarter	1.2981378	1.2086437	0.6946147	0.0894941	0.0621639
	3.quarter	1.3261242	1.1987343	0.6984494	0.1273899	0.0889754
	4.quarter	1.330147	1.1983919	0.7134081	0.1317552	0.0939952
2017	1.quarter	1.3262842	1.2081775	0.7301882	0.1181066	0.0862401
	2.quarter	1.3191157	1.1741647	0.7182314	0.1449509	0.1041083
	3.quarter	1.3636289	1.1742245	0.7231406	0.1894044	0.136966
	4.quarter	1.2149003	1.1779096	0.6278667	0.0369907	0.0232252
2018	1.quarter	1.2564256	1.1544524	0.5879542	0.1019731	0.0599555
	2.quarter	1.2558092	1.1655809	0.5485514	0.0902283	0.0494949
	3.quarter	1.3003992	1.1614497	0.4998539	0.1389495	0.0694545

Table 3-The First Step in Calculating the Prestige Driverof Kent Gida

KENT GIDA		S_i/C_i (a)	S^*/C^* (b)	A_i/OE_i (c)	(a-b)	(a-b)xc
2004	1.quarter	1.356408	1.0137519	0.4617917	0.3426562	0.1582358
	2.quarter	1.4697386	1.0333628	0.4432941	0.4363757	0.1934428
	3.quarter	1.559906	1.045408	0.4163051	0.514498	0.2141882
	4.quarter	1.4693448	1.0278436	0.3959422	0.4415013	0.174809
2005	1.quarter	1.5395178	1.0176058	0.4679809	0.521912	0.2442448
	2.quarter	1.4918023	1.1063669	0.4945006	0.3854355	0.1905981
	3.quarter	1.6038424	1.1172782	0.4790204	0.4865643	0.2330742
	4.quarter	1.5222839	1.1242919	0.4737319	0.397992	0.1885415
2006	1.quarter	1.476962	1.1544555	0.4679809	0.3225065	0.1509269
	2.quarter	1.4515486	1.1690071	0.4945006	0.2825415	0.1397169
	3.quarter	1.5091335	1.1799129	0.4790203	0.3292205	0.1577033
	4.quarter	1.52071	1.1878834	0.4738311	0.3328267	0.1577036
2007	1.quarter	1.3234269	1.2332809	0.4679808	0.090146	0.0421866
	2.quarter	1.3457415	1.2311024	0.4945006	0.1146391	0.0566891
	3.quarter	1.4378549	1.2210967	0.4790203	0.2167582	0.1038316

	4.quarter	1.5318091	1.2157788	0.473831	0.3160303	0.149745
2008	1.quarter	1.4044032	1.0622994	0.7695025	0.3421038	0.2632498
	2.quarter	1.3728409	1.0845453	0.7425676	0.2882956	0.214079
	3.quarter	1.418021	1.1505417	0.737263	0.2674793	0.1972026
	4.quarter	1.4197592	1.0151231	0.7652133	0.404636	0.3096329
2009	1.quarter	1.418022	1.0674046	0.6718752	0.3506173	0.2355711
	2.quarter	1.4277568	1.1230884	0.7302726	0.3046685	0.2224911
	3.quarter	1.4852241	1.1832993	0.7206842	0.3019248	0.2175925
	4.quarter	1.3656134	1.1606055	0.7107123	0.2050079	0.1457016
2010	1.quarter	1.159223	1.0554196	0.7495944	0.1038034	0.0778105
	2.quarter	1.1959533	1.0790137	0.7628073	0.1169396	0.0892024
	3.quarter	1.3030682	1.1818179	0.7782814	0.1212503	0.0943669
	4.quarter	1.3092526	1.204607	0.7926265	0.1046456	0.0829449
2011	1.quarter	1.2261603	1.0103515	0.830548	0.2158088	0.1792396
	2.quarter	1.2528781	1.053651	0.8228425	0.199227	0.1639325
	3.quarter	1.3006057	1.1567136	0.8157417	0.1438921	0.1173788
	4.quarter	1.2927416	1.0723133	0.7992531	0.2204282	0.1761779
2012	1.quarter	1.4306315	0.9635876	0.784916	0.4670439	0.3665902
	2.quarter	1.45368	0.9777309	0.7914327	0.4759491	0.3766817
	3.quarter	1.4200654	1.0960592	0.8120763	0.3240063	0.2631178
	4.quarter	1.3941857	1.1121377	0.7208931	0.282048	0.2033265
2013	1.quarter	1.3425782	1.0094943	0.7440798	0.3330839	0.247841
	2.quarter	1.4690141	1.1601224	0.7492924	0.3088917	0.2314502
	3.quarter	1.4363553	1.1677755	0.7160687	0.2685798	0.1923216
	4.quarter	1.4102778	1.1359601	0.6569078	0.2743177	0.1802014
2014	1.quarter	1.3662986	1.0563818	0.6425501	0.3099168	0.1991371
	2.quarter	1.4581988	1.0588403	0.6035912	0.3993585	0.2410493
	3.quarter	1.4246409	0.8968718	0.6660674	0.5277691	0.3515298
	4.quarter	1.4167742	0.96347	0.6658624	0.4533042	0.3018382
2015	1.quarter	1.3894056	1.1215392	0.5595889	0.2678664	0.1498951
	2.quarter	1.600827	1.1297689	0.5545681	0.4710581	0.2612338
	3.quarter	1.5647616	1.136945	0.5846342	0.4278167	0.2501162
	4.quarter	1.5598266	1.1181798	0.5341818	0.4416468	0.2359197
2016	1.quarter	1.5168017	1.1215392	0.5723862	0.3952625	0.2262428
	2.quarter	1.4405442	1.2086437	0.6282771	0.2319005	0.1456978
	3.quarter	1.4880905	1.1987343	0.586475	0.2893562	0.1697002
	4.quarter	1.4312178	1.1983919	0.5978477	0.232826	0.1391945
2017	1.quarter	1.420261	1.2081775	0.4809013	0.2120835	0.1019912
	2.quarter	1.4443307	1.1741647	0.5847825	0.270166	0.1579883
	3.quarter	1.4352831	1.1742245	0.6246024	0.2610585	0.1630578
	4.quarter	1.4213347	1.1779096	0.6028171	0.2434251	0.1467408
2018	1.quarter	1.4463679	1.1544524	0.6326218	0.2919154	0.1846721
	2.quarter	1.4775524	1.1655809	0.602423	0.3119715	0.1879388
	3.quarter	1.4053474	1.1614497	0.5646953	0.2438977	0.1377279

Table 4- The Second Step in Calculating the Prestige Driverof Pinar Sut

PINAR SUT		C_i/S_i (d)	[(a-b)xc]/5 (e)	PD (d x e)
2008	1.quarter	0.81311	0.08901	0.07237
	2.quarter	0.80418	0.08058	0.06480
	3.quarter	0.81566	0.05926	0.04833
	4.quarter	0.81452	0.07216	0.05877
2009	1.quarter	0.73514	0.09739	0.07159
	2.quarter	0.74858	0.08111	0.06072
	3.quarter	0.76240	0.05487	0.04183
	4.quarter	0.77818	0.06384	0.04968
2010	1.quarter	0.81445	0.08369	0.06816
	2.quarter	0.81980	0.07277	0.05965
	3.quarter	0.80444	0.03993	0.03212
	4.quarter	0.82008	0.04528	0.03713

2011	1.quarter	0.77289	0.09771	0.07552
	2.quarter	0.78398	0.08240	0.06460
	3.quarter	0.79839	0.04313	0.03444
	4.quarter	0.79453	0.05775	0.04588
2012	1.quarter	0.79238	0.12421	0.09842
	2.quarter	0.81138	0.10510	0.08527
	3.quarter	0.81719	0.05261	0.04299
	4.quarter	0.80062	0.06911	0.05533
2013	1.quarter	0.77951	0.13805	0.10761
	2.quarter	0.79183	0.10036	0.07946
	3.quarter	0.80605	0.05362	0.04322
	4.quarter	0.81371	0.05899	0.04800
2014	1.quarter	0.81278	0.13159	0.10695
	2.quarter	0.82813	0.09533	0.07894
	3.quarter	0.83265	0.07491	0.06237
	4.quarter	0.83231	0.07332	0.06102
2015	1.quarter	0.81261	0.12975	0.10543
	2.quarter	0.83237	0.08997	0.07489
	3.quarter	0.84158	0.07429	0.06252
	4.quarter	0.83938	0.07969	0.06689
2016	1.quarter	0.80181	0.11630	0.09325
	2.quarter	0.80607	0.07186	0.05792
	3.quarter	0.81865	0.06680	0.05469
	4.quarter	0.82102	0.06255	0.05136
2017	1.quarter	0.81223	0.08191	0.06653
	2.quarter	0.82233	0.04736	0.03894
	3.quarter	0.84187	0.05367	0.04518
	4.quarter	0.84133	0.04837	0.04070
2018	1.quarter	0.81768	0.05848	0.04782
	2.quarter	0.83016	0.03906	0.03243
	3.quarter	0.84417	0.04734	0.03997

Table 5- The Second Step in Calculating the Prestige Driverof Kerevitas

KEREVITAS		C_i/S_i (d)	[(a-b)xc]/5 (e)	PD (d x e)
2008	1.quarter	0.6847711	0.3249	0.222457
	2.quarter	0.7213777	0.3471	0.250409
	3.quarter	0.7206022	0.2979	0.214692
	4.quarter	0.7256483	0.3152	0.228728
2009	1.quarter	0.6631692	0.3223	0.213746
	2.quarter	0.6870343	0.3269	0.224594
	3.quarter	0.713062	0.2659	0.189638
	4.quarter	0.7061132	0.2953	0.208486
2010	1.quarter	0.7133803	0.2952	0.210595
	2.quarter	0.7279182	0.2986	0.217352
	3.quarter	0.7238043	0.2212	0.160131
	4.quarter	0.7259528	0.2468	0.17918
2011	1.quarter	0.7154882	0.2992	0.214107
	2.quarter	0.7242639	0.2825	0.204592
	3.quarter	0.7357846	0.1825	0.134278
	4.quarter	0.7412923	0.2158	0.159995
2012	1.quarter	0.7517695	0.2857	0.214748
	2.quarter	0.7583153	0.2765	0.209694
	3.quarter	0.7470257	0.1677	0.125274
	4.quarter	0.7334428	0.1977	0.145036
2013	1.quarter	0.6580438	0.2991	0.196828
	2.quarter	0.7042777	0.2291	0.161337
	3.quarter	0.7190356	0.162	0.116471
	4.quarter	0.7224676	0.177	0.127879

2014	1.quarter	0.7062886	0.2858	0.201861
	2.quarter	0.7132232	0.2308	0.164616
	3.quarter	0.7193026	0.2022	0.145458
	4.quarter	0.7175941	0.1997	0.143305
2015	1.quarter	0.6969958	0.2627	0.183079
	2.quarter	0.7207356	0.2138	0.154108
	3.quarter	0.7116562	0.201	0.143053
	4.quarter	0.7234765	0.2046	0.148007
2016	1.quarter	0.7669103	0.2232	0.171191
	2.quarter	0.7703342	0.1731	0.133381
	3.quarter	0.7540772	0.1871	0.141099
	4.quarter	0.7517966	0.1812	0.136239
2017	1.quarter	0.7539862	0.1946	0.146753
	2.quarter	0.7580836	0.1491	0.113029
	3.quarter	0.7333373	0.1815	0.13308
	4.quarter	0.8231128	0.1509	0.124235
2018	1.quarter	0.7959087	0.1318	0.104921
	2.quarter	0.7962993	0.123	0.097921
	3.quarter	0.7689946	0.1642	0.126235

Table 6- The Second Step in Calculating the Prestige Driverof Kent Gida

KENT GIDA		C_i/S_i (d)	[(a-b)xc]/5 (e)	PD (d x e)
2008	1.quarter	0.7120462	0.1718	0.122307
	2.quarter	0.7284165	0.1589	0.115749
	3.quarter	0.7052082	0.1812	0.127784
	4.quarter	0.7043448	0.1961	0.138112
2009	1.quarter	0.7052077	0.1872	0.13204
	2.quarter	0.7003994	0.1647	0.115366
	3.quarter	0.6732991	0.1819	0.12246
	4.quarter	0.7322717	0.1903	0.139326
2010	1.quarter	0.8626468	0.1539	0.132804
	2.quarter	0.8361531	0.1444	0.12077
	3.quarter	0.7674195	0.1541	0.11829
	4.quarter	0.7637945	0.1691	0.129192
2011	1.quarter	0.815554	0.1596	0.130172
	2.quarter	0.7981623	0.1493	0.119149
	3.quarter	0.7688725	0.1461	0.112313
	4.quarter	0.7735498	0.1728	0.133701
2012	1.quarter	0.698992	0.2245	0.156918
	2.quarter	0.6879093	0.2133	0.146715
	3.quarter	0.7041929	0.1779	0.125298
	4.quarter	0.7172646	0.1836	0.131659
2013	1.quarter	0.7448356	0.2214	0.164914
	2.quarter	0.6807287	0.2168	0.147549
	3.quarter	0.6962066	0.177	0.123198
	4.quarter	0.7090802	0.1577	0.111801
2014	1.quarter	0.7319044	0.2141	0.156718
	2.quarter	0.6857775	0.2205	0.151189
	3.quarter	0.7019313	0.2037	0.143014
	4.quarter	0.7058288	0.1889	0.133329
2015	1.quarter	0.7197323	0.2285	0.164488
	2.quarter	0.6246771	0.2549	0.159211
	3.quarter	0.639075	0.2349	0.150114
	4.quarter	0.6410969	0.2195	0.140716
2016	1.quarter	0.659282	0.2379	0.15687
	2.quarter	0.6941821	0.2512	0.174394
	3.quarter	0.6720021	0.2454	0.164881

	4.quarter	0.6987057	0.2121	0.148193
2017	1.quarter	0.7040959	0.185	0.130273
	2.quarter	0.6923622	0.2075	0.143654
	3.quarter	0.6967267	0.2253	0.157004
	4.quarter	0.703564	0.2008	0.141261
2018	1.quarter	0.691387	0.1724	0.119187
	2.quarter	0.6767949	0.1988	0.134534
	3.quarter	0.7115678	0.2144	0.152579

Table 7-Calculation ofthe LoyaltyDriverof Pinar Sut

Cost of Sales	2004	2005	2006	2007
1. quarter	37706794	37549662	40029560	45282805
2. quarter	41641700	85477874	91031907	99872781
3. quarter	45791348	134047510	149532874	161810887
4. quarter	175616047	176879432	196392729	218750180

Pınar Sut		Cost of Sales	Five-Year Average of Cost of Sales	Standard Deviation of Cost of Sales	Loyalty Driver
2008	1. quarter	99382603	73483441	15136217.6	0.79401866
	2. quarter	197406518	137316182	46358225.24	0.662397944
	3. quarter	303502699	207499364	81778441.03	0.605885823
	4. quarter	393246746	311102447	56123001.48	0.819599614
2009	1. quarter	83384438	78358221	13529766.33	0.827334436
	2. quarter	170034101	159269719	26341721.22	0.834609358
	3. quarter	268013679	248212866	40861683.59	0.835376448
	4. quarter	374268811	333807142	54084363.01	0.837977214
2010	1. quarter	112349206	88133607	16560662.25	0.812095944
	2. quarter	227418007	179868961	30911484.53	0.82814442
	3. quarter	345945969	279397894	43934729.86	0.842752108
	4. quarter	473247883	378038673	59345624.36	0.843017055
2011	1. quarter	111769450	97743777	13206522.67	0.864886308
	2. quarter	234780022	199799853	27584958.9	0.861937041
	3. quarter	378562431	312392653	44069895.84	0.858927874
	4. quarter	517326553	423789253	60895092.3	0.856308078
2012	1. quarter	139861422	109349424	18543760.45	0.830417392
	2. quarter	293249456	224577621	41330962.03	0.815961351
	3. quarter	449359045	349076765	62584281.52	0.820714846
	4. quarter	582167481	468051495	77289629.76	0.834869388
2013	1. quarter	149897510	119452405	23468335.56	0.803534006
	2. quarter	310676192	247231556	50298973.03	0.796551161
	3. quarter	483883982	385153021	76383860.11	0.801679187
	4. quarter	658957435	521193633	96537379.14	0.814776365
2014	1. quarter	181841075	139143733	26101800.16	0.812411241
	2. quarter	380480347	289320805	55835835.02	0.807010647
	3. quarter	582718878	448094061	83276935.88	0.814153002
	4. quarter	782759244	602891719	109593893	0.818219608
2015	1. quarter	194570176	155587927	29693791.43	0.809151056
	2. quarter	407888275	325414858	62129843.79	0.809074963
	3. quarter	631488653	505202598	91178571	0.81952078
	4. quarter	848781037	677998350	122884587.6	0.818753855
2016	1. quarter	219635739	177161184	29201514.93	0.835169792
	2. quarter	438988391	366256532	55936838.65	0.847274154
	3. quarter	653648410	560219794	80537726.8	0.856239055
	4. quarter	876662891	749865618	112544002.1	0.849914439
2017	1. quarter	235393962	196267692	29793063.76	0.848201895
	2. quarter	474115945	402429830	55508075.05	0.862067693
	3. quarter	755250107	621398006	88841968.01	0.857028881
	4. quarter	1043294850	842091091	125523799.7	0.850937979
2018	1. quarter	297743950	225836980	40530621.31	0.820531512
	2. quarter	592397801	458774152	73758279.4	0.839227474

	3. quarter	940446395	712710489	127008973.5	0.821794438

Table 8-Calculation ofthe LoyaltyDriverof Kerevitas

Cost of Sales	2004	2005	2006	2007
1. quarter	8755868	9521009	11324566	14588926
2. quarter	18052818	18947641	25203048	33860515
3. quarter	31248773	30269283	40228716	53987605
4. quarter	43364487	41832390	54658560	72511978

Kerevitas		Cost of Sales	Five-Year Average of Cost of Sales	Standard Deviation of Cost of Sales	Loyalty Driver
2008	1. quarter	19933675	12824809	4083385.58	0.681602615
	2. quarter	45069667	28226738	10140776.02	0.640738647
	3. quarter	69782948	45103465	14991820.76	0.66761266
	4. quarter	92365573	60946598	19156894.33	0.685677379
2009	1. quarter	30282388	17130113	7468638.009	0.564005322
	2. quarter	59635225	36543219	14500633.1	0.603192236
	3. quarter	87890108	56431732	20595483.05	0.635037198
	4. quarter	112177270	74709154	25311437.58	0.661200319
2010	1. quarter	31288702	21483651	8083359.009	0.623743708
	2. quarter	62759649	45305621	14457802.12	0.680882816
	3. quarter	95434966	69464869	20534531.35	0.70438969
	4. quarter	128829506	92108577	26599908.19	0.711211388
2011	1. quarter	37731786	26765095	8343021.905	0.688287235
	2. quarter	78811298	56027271	15420040.78	0.724776157
	3. quarter	120591063	85537338	22697350.77	0.734649788
	4. quarter	156839922	112544849	29110866.01	0.741339865
2012	1. quarter	44981701	32843650	8329124.041	0.746400783
	2. quarter	92565449	67768258	16390898.92	0.758133092
	3. quarter	137564983	102252814	24042891.79	0.764868164
	4. quarter	170212699	132084994	28464280.88	0.784500267
2013	1. quarter	38969485	36650812	5389944.502	0.852937926
	2. quarter	91632294	77080783	13884944.43	0.819865031
	3. quarter	141982024	116692629	21780174.02	0.813354329
	4. quarter	191091733	151830226	28305011.36	0.813574595
2014	1. quarter	55252886	41644912	8075056.254	0.806097411
	2. quarter	119932356	89140209	18808080.3	0.789005652
	3. quarter	181175828	135349773	28142254.94	0.792077561
	4. quarter	234753007	176345373	35509820.53	0.798634805
2015	1. quarter	58350636	47057299	8383234.96	0.821850485
	2. quarter	140807386	104749757	22467722.51	0.785510504
	3. quarter	205783561	157419492	31280335.03	0.801293127
	4. quarter	276917860	205963044	44217128.03	0.785315234
2016	1. quarter	82972209	56105383	15132544.75	0.730283552
	2. quarter	179963280	124980153	33051228.57	0.735548183
	3. quarter	263220373	185945354	46176110.88	0.75166838
	4. quarter	347247520	244044564	63360844.93	0.740371824
2017	1. quarter	96357688	66380581	20560072.28	0.690269774
	2. quarter	218956366	150258336	44828119.17	0.701659687
	3. quarter	329403965	224313150	65636026.58	0.707391089
	4. quarter	1992515999	608505224	775824776.5	-0.274968145
2018	1. quarter	521761569	162938998	180064666.1	-0.105104786
	2. quarter	1006590157	333249909	338374170.8	-0.015376634
	3. quarter	1386450684	473206882	459474748.8	0.029019302

Table 9-Calculation ofthe Loyalty Driverof Kent Gida

Cost of Sales	2004	2005	2006	2007
1. quarter	36553569	32409343	37016978	56531080

2. quarter	64386691	69683617	87455642	120438484
3. quarter	98981923	115458698	152203388	200270024
4. quarter	161491597	176465122	232545253	266734482

Kent Gida		Cost of Sales	Five-Year Average of Cost of Sales	Standard Deviation of Cost of Sales	Loyalty Driver
2008	1. quarter	59105550	221616520	11164571.11	0.949622117
	2. quarter	150283343	492247777	32492702.54	0.933991164
	3. quarter	256980886	823894919	57759318.06	0.9298948
	4. quarter	354657550	1191894004	69431647.23	0.941746794
2009	1. quarter	67633955	50539381	13513384.69	0.732616736
	2. quarter	151702998	115912816	32953608.35	0.715703498
	3. quarter	258221310	196626861	56588820.02	0.712201987
	4. quarter	370360391	280152559	73329436.93	0.738251769
2010	1. quarter	71319785	291607348	11944707.84	0.959038385
	2. quarter	150416951	660297418	25217151.45	0.961809405
	3. quarter	257426052	1125101660	42635191.38	0.962105476
	4. quarter	363768773	1588066449	56762816.17	0.964256649
2011	1. quarter	88057573	68529588	11159805.04	0.83715348
	2. quarter	195015185	153571392	23831199.01	0.844820063
	3. quarter	321223682	258824391	38283163.35	0.85208827
	4. quarter	437726413	358649522	54554223.1	0.847889876
2012	1. quarter	89667418	375784281	11882310.27	0.96837997
	2. quarter	199914613	847333090	22918305.89	0.972952424
	3. quarter	316919484	1410771414	30176181.54	0.978610155
	4. quarter	418454875	1944968002	32879496.63	0.983095096
2013	1. quarter	93105106	81956767	10385063.94	0.873286072
	2. quarter	201309751	179671899	23458439.59	0.869437349
	3. quarter	315146150	293787335	29431729.37	0.899819612
	4. quarter	414267261	400915542	28825115.87	0.928101775
2014	1. quarter	101176040	443325922	9782340.781	0.977934201
	2. quarter	223646326	970302826	23949171.89	0.975317838
	3. quarter	335882035	1546597403	26951502.25	0.982573679
	4. quarter	439901330	2074118652	27471885.32	0.986754911
2015	1. quarter	86709809	91743189	5178049.839	0.9435593
	2. quarter	193773045	202731784	10836803.98	0.946546103
	3. quarter	278594525	313553175	18938803.99	0.939599387
	4. quarter	355677191	413205414	30502892.07	0.926179834
2016	1. quarter	79694150	450352523	7094606.553	0.984246549
	2. quarter	223682115	1042325850	12666439.88	0.987847908
	3. quarter	307391331	1553933525	18623943.43	0.988014968
	4. quarter	421567828	2049868485	28525647.15	0.986084157
2017	1. quarter	111833639	94503748	11197057.47	0.88151732
	2. quarter	249363600	218354967	19558745.28	0.910426836
	3. quarter	371979573	321798722	31096269.17	0.903367332
	4. quarter	506512471	427585216	48508842.88	0.886551637
2018	1. quarter	132983732	512397370	18908000.55	0.963098951
	2. quarter	301015809	1191480895	35963143.12	0.969816433
	3. quarter	470346051	1764193515	66392077.72	0.962366896

Table 10-Calculation ofthe ExpansionDriverof Pinar Sut

Pınar Sut		OverseasSales (SO)	Sales of Non-Core Business Segments (SX)	$(SO_i - SO_{i-1})/SO_{i-1}$ (a)	$(SX_i - SX_{i-1})/SX_{i-1}$ (b)	(a+1)	(b+1)	(a+1)/2 (c)	(b+1)/2 (d)	(c+d)	ED [(c+d)/2]
2007	1. quarter	8604316	2682546	-0.0191	-0.505	0.98092	0.49542	0.4905	0.248	0.73817	0.36908
	2. quarter	16467817	11446904	-0.0923	-0.443	0.90772	0.55651	0.4539	0.278	0.73211	0.36606
	3. quarter	23412463	11949659	-0.1334	-0.62	0.86662	0.37959	0.4333	0.19	0.6231	0.31155

Year		Number 1	Number 2	(a)	(b)	a+1	b+1	(c)	(d)	(c+d)	ED
	4. quarter	31752168	23401901	-0.1185	-0.052	0.88153	0.94824	0.4408	0.474	0.91488	0.45744
2008	1. quarter	7977706	1168167	-0.0728	-0.565	0.92717	0.43547	0.4636	0.218	0.68132	0.34066
	2. quarter	18588225	4230262	0.12876	-0.63	1.12876	0.36956	0.5644	0.185	0.74916	0.37458
	3. quarter	27061921	4897981	0.15588	-0.59	1.15588	0.40988	0.5779	0.205	0.78288	0.39144
	4. quarter	35339012	6727669	0.11296	-0.713	1.11296	0.28748	0.5565	0.144	0.70022	0.35011
2009	1. quarter	13510520	478842	0.69353	-0.59	1.69353	0.40991	0.8468	0.205	1.05172	0.52586
	2. quarter	25664817	2087209	0.3807	-0.507	1.3807	0.4934	0.6904	0.247	0.93705	0.46853
	3. quarter	34992549	2853220	0.29305	-0.417	1.29305	0.58253	0.6465	0.291	0.93779	0.4689
	4. quarter	35204216	5277246	-0.0038	-0.216	0.99619	0.78441	0.4981	0.392	0.8903	0.44515
2010	1. quarter	9598272	728368	-0.2896	0.5211	0.71043	1.5211	0.3552	0.761	1.11577	0.55788
	2. quarter	19936036	5693967	-0.2232	1.728	0.77678	2.72803	0.3884	1.364	1.75241	0.8762
	3. quarter	31694600	6336237	-0.0942	1.2207	0.90575	2.22073	0.4529	1.11	1.56324	0.78162
	4. quarter	43670966	6888841	0.2405	0.3054	1.2405	1.30539	0.6203	0.653	1.27294	0.63647
2011	1. quarter	12074699	704661	0.25801	-0.033	1.25801	0.96745	0.629	0.484	1.11273	0.55636
	2. quarter	23944329	5819651	0.20106	0.0221	1.20106	1.02207	0.6005	0.511	1.11157	0.55578
	3. quarter	39712471	6444532	0.25297	0.0171	1.25297	1.01709	0.6265	0.509	1.13503	0.56752
	4. quarter	55295546	8635995	0.26619	0.2536	1.26619	1.25362	0.6331	0.627	1.2599	0.62995
2012	1. quarter	18429774	1266702	0.52631	0.7976	1.52631	1.7976	0.7632	0.899	1.66196	0.83098
	2. quarter	36330011	5678947	0.51727	-0.024	1.51727	0.97582	0.7586	0.488	1.24655	0.62327
	3. quarter	52917172	6452544	0.33251	0.0012	1.33251	1.00124	0.6663	0.501	1.16688	0.58344
	4. quarter	73499930	7468828	0.32922	-0.135	1.32922	0.86485	0.6646	0.432	1.09703	0.54852
2013	1. quarter	17482259	1499020	-0.0514	0.1834	0.94859	1.1834	0.4743	0.592	1.066	0.533
	2. quarter	39683287	2151905	0.0923	-0.621	1.0923	0.37893	0.5462	0.189	0.73561	0.36781
	3. quarter	60072320	3002052	0.13521	-0.535	1.13521	0.46525	0.5676	0.233	0.80023	0.40012
	4. quarter	88483191	6003641	0.20385	-0.196	1.20385	0.80383	0.6019	0.402	1.00384	0.50192
2014	1. quarter	33765991	1332844	0.93144	-0.111	1.93144	0.88914	0.9657	0.445	1.41029	0.70515
	2. quarter	60167375	3753861	0.51619	0.7444	1.51619	1.74444	0.7581	0.872	1.63031	0.81516
	3. quarter	85141213	4475317	0.41731	0.4908	1.41731	1.49075	0.7087	0.745	1.45403	0.72702
	4. quarter	112583334	8294822	0.27237	0.3816	1.27237	1.38163	0.6362	0.691	1.327	0.6635
2015	1. quarter	28929143	2536217	-0.1432	0.9029	0.85675	1.90286	0.4284	0.951	1.37981	0.6899
	2. quarter	58961911	4434811	-0.02	0.1814	0.97996	1.1814	0.49	0.591	1.08068	0.54034
	3. quarter	90368893	7934686	0.0614	0.773	1.0614	1.77299	0.5307	0.886	1.41719	0.7086
	4. quarter	123953781	8792031	0.101	0.0599	1.101	1.05994	0.5505	0.53	1.08047	0.54023
2016	1. quarter	33022371	1131388	0.14149	-0.554	1.14149	0.44609	0.5707	0.223	0.79379	0.3969
	2. quarter	66942020	2293498	0.13534	-0.483	1.13534	0.51716	0.5677	0.259	0.82625	0.41313
	3. quarter	91331077	4461673	0.01065	-0.438	1.01065	0.5623	0.5053	0.281	0.78647	0.39324
	4. quarter	126800976	11644364	0.02297	0.3244	1.02297	1.32442	0.5115	0.662	1.1737	0.58685
2017	1. quarter	43862199	4819590	0.32826	3.2599	1.32826	4.25989	0.6641	2.13	2.79407	1.39704
	2. quarter	87536691	5172833	0.30765	1.2554	1.30765	2.25543	0.6538	1.128	1.78154	0.89077
	3. quarter	122177074	6663098	0.33774	0.4934	1.33774	1.49341	0.6689	0.747	1.41557	0.70779
	4. quarter	166928677	9963406	0.31646	-0.144	1.31646	0.85564	0.6582	0.428	1.08605	0.54303
2018	1. quarter	47365139	4489785	0.07986	-0.068	1.07986	0.93157	0.5399	0.466	1.00572	0.50286
	2. quarter	99177975	11348331	0.13299	1.1938	1.13299	2.19383	0.5665	1.097	1.66341	0.83171
	3. quarter	157856311	27017494	0.29203	3.0548	1.29203	4.05479	0.646	2.027	2.67341	1.33671

Table 11-Calculation ofthe ExpansionDriverof Kerevitas

Kerevitas		OverseasSales (SO)	Sales of Non-Core Business Segments (SX)	$(S0_i-SO_{i-1})/SO_{i-1}$ (a)	$(SX_i-SX_{i-1})/SX_{i-1}$ (b)	a+1	b+1	(a+1)/2 (c)	(b+1)/2 (d)	(c+d)	ED $[(c+d)/2]$
2007	1. quarter	4110041	2479192	0.34551	1.9199	1.34551	2.9199	0.67276	1.45995	2.13271	1.06635
	2. quarter	9137805	7152924	0.29093	6.0306	1.29093	7.03062	0.64546	3.51531	4.16077	2.08039
	3. quarter	14210063	13783890	0.25245	9.5703	1.25245	10.5703	0.62623	5.28517	5.9114	2.9557
	4. quarter	5682257	16815761	-0.6374	8.6093	0.36264	9.60932	0.18132	4.80466	4.98598	2.49299
2008	1. quarter	864922	1125370	-0.7896	-0.546	0.21044	0.45393	0.10522	0.22696	0.33218	0.16609
	2. quarter	3069758	1866531	-0.6641	-0.739	0.33594	0.26095	0.16797	0.13047	0.29844	0.14922
	3. quarter	1363057	2329873	-0.9041	-0.831	0.09592	0.16903	0.04796	0.08451	0.13248	0.06624
	4. quarter	6042910	3350064	0.06347	-0.801	1.06347	0.19922	0.53174	0.09961	0.63135	0.31567

				(a)	(b)	(a+1)	(b+1)	(a+1)/2	(b+1)/2	(c+d)	ED
2009	1. quarter	1217270	724877	0.40738	-0.356	1.40738	0.64412	0.70369	0.32206	1.02575	0.51287
	2. quarter	2593225	1569376	-0.1552	-0.159	0.84477	0.8408	0.42238	0.4204	0.84278	0.42139
	3. quarter	3956282	1771926	1.90251	-0.239	2.90251	0.76052	1.45125	0.38026	1.83152	0.91576
	4. quarter	5954246	1899563	-0.0147	-0.433	0.98533	0.56702	0.49266	0.28351	0.77618	0.38809
2010	1. quarter	1127920	426526	-0.0734	-0.412	0.9266	0.58841	0.4633	0.29421	0.7575	0.37875
	2. quarter	2341100	1045718	-0.0972	-0.334	0.90278	0.66633	0.45139	0.33316	0.78455	0.39228
	3. quarter	4062202	6512573	0.02677	2.6754	1.02677	3.67542	0.51339	1.83771	2.3511	1.17555
	4. quarter	6253333	6562495	0.05023	2.4547	1.05023	3.45474	0.52512	1.72737	2.25249	1.12624
2011	1. quarter	2425226	833297	1.15018	0.9537	2.15018	1.95368	1.07509	0.97684	2.05193	1.02596
	2. quarter	4333565	1584073	0.85108	0.5148	1.85108	1.51482	0.92554	0.75741	1.68295	0.84147
	3. quarter	4451981	1876310	0.09595	-0.712	1.09595	0.28811	0.54798	0.14405	0.69203	0.34601
	4. quarter	6447704	2759689	0.03108	-0.579	1.03108	0.42052	0.51554	0.21026	0.7258	0.3629
2012	1. quarter	2041778	2886646	-0.1581	2.4641	0.84189	3.46413	0.42095	1.73206	2.15301	1.0765
	2. quarter	3629049	3546361	-0.1626	1.2388	0.83743	2.23876	0.41871	1.11938	1.53809	0.76905
	3. quarter	5996145	3875138	0.34685	1.0653	1.34685	2.0653	0.67342	1.03265	1.70607	0.85304
	4. quarter	9315023	2586233	0.4447	-0.063	1.4447	0.93715	0.72235	0.46857	1.19093	0.59546
2013	1. quarter	3494324	702057	0.71141	-0.757	1.71141	0.24321	0.85571	0.1216	0.97731	0.48866
	2. quarter	8560746	4523418	1.35895	0.2755	2.35895	1.27551	1.17948	0.63775	1.81723	0.90861
	3. quarter	12928873	7446205	1.1562	0.9215	2.1562	1.92153	1.0781	0.96077	2.03887	1.01943
	4. quarter	17467420	9287975	0.87519	2.5913	1.87519	3.59131	0.93759	1.79566	2.73325	1.36663
2014	1. quarter	7505959	2853402	1.14804	3.0643	2.14804	4.06435	1.07402	2.03217	3.10619	1.5531
	2. quarter	12845754	1207659	0.50054	-0.733	1.50054	0.26698	0.75027	0.13349	0.88376	0.44188
	3. quarter	16722176	2915347	0.2934	-0.608	1.2934	0.39152	0.6467	0.19576	0.84246	0.42123
	4. quarter	22984444	8022978	0.31585	-0.136	1.31585	0.8638	0.65792	0.4319	1.08982	0.54491
2015	1. quarter	6834734	12364853	-0.0894	3.3334	0.91057	4.33337	0.45529	2.16669	2.62197	1.31099
	2. quarter	15026422	13685786	0.16976	10.332	1.16976	11.3325	0.58488	5.66625	6.25112	3.12556
	3. quarter	19263536	17818386	0.15198	5.1119	1.15198	6.11193	0.57599	3.05596	3.63195	1.81598
	4. quarter	21145008	21034721	-0.08	1.6218	0.91997	2.62181	0.45999	1.3109	1.77089	0.88545
2016	1. quarter	7746489	4462350	0.1334	-0.639	1.1334	0.36089	0.5667	0.18044	0.74715	0.37357
	2. quarter	19407931	7312865	0.29159	-0.466	1.29159	0.53434	0.64579	0.26717	0.91296	0.45648
	3. quarter	33287052	9019128	0.72798	-0.494	1.72798	0.50617	0.86399	0.25308	1.11708	0.55854
	4. quarter	43332891	14141119	1.04932	-0.328	2.04932	0.67228	1.02466	0.33614	1.3608	0.6804
2017	1. quarter	10054852	6983619	0.29799	0.565	1.29799	1.56501	0.64899	0.7825	1.4315	0.71575
	2. quarter	27802617	11645289	0.43254	0.5924	1.43254	1.59244	0.71627	0.79622	1.51249	0.75624
	3. quarter	45182904	15833654	0.35737	0.7556	1.35737	1.75556	0.67869	0.87778	1.55647	0.77823
	4. quarter	315868996	34062247	6.28936	1.4087	7.28936	2.40874	3.64468	1.20437	4.84905	2.42452
2018	1. quarter	95226339	9494375	8.47069	0.3595	9.47069	1.35952	4.73534	0.67976	5.4151	2.70755
	2. quarter	180879461	20387993	5.50584	0.7508	6.50584	1.75075	3.25292	0.87538	4.1283	2.06415
	3. quarter	267251517	57710174	4.91488	2.6448	5.91488	3.64478	2.95744	1.82239	4.77983	2.38992

Table 12-Calculation ofthe ExpansionDriverof Kent Gida

Kent Gida		OverseasSales (SO)	Sales of Non-Core Business Segments (SX)	$(SO_i-SO_{i-1})/SO_{i-1}$ (a)	$(SX_i-SX_{i-1})/SX_{i-1}$ (b)	(a+1)	(b+1)	(a+1)/2 (c)	(b+1)/2 (d)	(c+d)	ED [(c+d)/2]
2007	1. quarter	30826432	3075057	0.36841	0.9601	1.36841	1.96006	0.68421	0.98003	1.66424	0.83212
	2. quarter	66782542	10687491	0.27675	20.364	1.27675	21.3643	0.63838	10.6821	11.3205	5.66026
	3. quarter	118649807	15266734	0.25366	0.1738	1.25366	1.17378	0.62683	0.58689	1.21372	0.60686
	4. quarter	168352583	20865077	0.15539	5.6538	1.15539	6.65384	0.5777	3.32692	3.90461	1.95231
2008	1. quarter	48896940	2557649	0.5862	-0.168	1.5862	0.83174	0.7931	0.41587	1.20897	0.60449
	2. quarter	106020037	5635102	0.58754	-0.473	1.58754	0.52726	0.79377	0.26363	1.0574	0.5287
	3. quarter	150158747	6518534	0.26556	-0.573	1.26556	0.42698	0.63278	0.21349	0.84627	0.42313
	4. quarter	218502160	4317032	0.29788	-0.793	1.29788	0.2069	0.64894	0.10345	0.75239	0.3762
2009	1. quarter	47633903	4710240	-0.0258	0.8416	0.97417	1.84163	0.48708	0.92081	1.4079	0.70395
	2. quarter	101153145	4097223	-0.0459	-0.273	0.95409	0.72709	0.47705	0.36354	0.84059	0.4203
	3. quarter	158952148	9828198	0.05856	0.5077	1.05856	1.50773	0.52928	0.75387	1.28315	0.64157
	4. quarter	211061204	13117067	-0.0341	2.0384	0.96595	3.03845	0.48297	1.51922	2.0022	1.0011

2010	**1. quarter**	34847655	2624135	-0.2684	-0.443	0.73157	0.55711	0.36579	0.27856	0.64434	0.32217
	2. quarter	73552685	2895597	-0.2729	-0.293	0.72714	0.70672	0.36357	0.35336	0.71693	0.35847
	3. quarter	117571398	4166605	-0.2603	-0.576	0.73967	0.42394	0.36983	0.21197	0.5818	0.2909
	4. quarter	165128343	6552731	-0.2176	-0.5	0.78237	0.49956	0.39119	0.24978	0.64096	0.32048
2011	**1. quarter**	41595313	1060849	0.19363	-0.596	1.19363	0.40427	0.59682	0.20213	0.79895	0.39947
	2. quarter	85305767	58351542	0.15979	19.152	1.15979	20.1518	0.5799	10.0759	10.6558	5.3279
	3. quarter	132787654	46737624	0.12942	10.217	1.12942	11.2172	0.56471	5.6086	6.17331	3.08665
	4. quarter	180508199	47785620	0.09314	6.2925	1.09314	7.29247	0.54657	3.64624	4.19281	2.0964
2012	**1. quarter**	39183249	1503552	-0.058	0.4173	0.94201	1.41731	0.47101	0.70866	1.17966	0.58983
	2. quarter	79710608	48135880	-0.0656	-0.175	0.93441	0.82493	0.46721	0.41246	0.87967	0.43983
	3. quarter	126896085	49904548	-0.0444	0.0678	0.95563	1.06776	0.47782	0.53388	1.0117	0.50585
	4. quarter	173501567	22504302	-0.0388	-0.529	0.96118	0.47094	0.48059	0.23547	0.71606	0.35803
2013	**1. quarter**	40965880	7576681	0.04549	4.0392	1.04549	5.03919	0.52275	2.51959	3.04234	1.52117
	2. quarter	84428577	13519579	0.05919	-0.719	1.05919	0.28086	0.52959	0.14043	0.67003	0.33501
	3. quarter	132788693	15982621	0.04644	-0.68	1.04644	0.32026	0.52322	0.16013	0.68335	0.34168
	4. quarter	180629525	25005786	0.04108	0.1112	1.04108	1.11116	0.52054	0.55558	1.07612	0.53806
2014	**1. quarter**	41302816	11798847	0.00822	0.5573	1.00822	1.55726	0.50411	0.77863	1.28274	0.64137
	2. quarter	86402477	14221423	0.02338	0.0519	1.02338	1.05191	0.51169	0.52596	1.03765	0.51882
	3. quarter	128417526	19941203	-0.0329	0.2477	0.96708	1.24768	0.48354	0.62384	1.10738	0.55369
	4. quarter	8467734	26318759	-0.9531	0.0525	0.04688	1.05251	0.02344	0.52625	0.54969	0.27485
2015	**1. quarter**	23333374	14648700	-0.4351	0.2415	0.56493	1.24154	0.28247	0.62077	0.90324	0.45162
	2. quarter	49250963	24026122	-0.43	0.6894	0.57002	1.68943	0.28501	0.84472	1.12972	0.56486
	3. quarter	73293695	41656823	-0.4293	1.089	0.57075	2.08898	0.28537	1.04449	1.32986	0.66493
	4. quarter	104880701	58851458	11.3859	1.2361	12.3859	2.2361	6.19296	1.11805	7.31101	3.65551
2016	**1. quarter**	23878336	9815945	0.02336	-0.33	1.02336	0.67009	0.51168	0.33504	0.84672	0.42336
	2. quarter	61094768	17149967	0.24048	-0.286	1.24048	0.71381	0.62024	0.3569	0.97714	0.48857
	3. quarter	93877049	25092805	0.28083	-0.398	1.28083	0.60237	0.64042	0.30118	0.9416	0.4708
	4. quarter	148538509	34891216	0.41626	-0.407	1.41626	0.59287	0.70813	0.29643	1.00457	0.50228
2017	**1. quarter**	42126846	7753364	0.76423	-0.21	1.76423	0.78987	0.88211	0.39494	1.27705	0.63853
	2. quarter	90927449	12696443	0.4883	-0.26	1.4883	0.74032	0.74415	0.37016	1.11431	0.55716
	3. quarter	153175262	18277537	0.63166	-0.272	1.63166	0.7284	0.81583	0.3642	1.18003	0.59001
	4. quarter	225637952	31728644	0.51905	-0.091	1.51905	0.90936	0.75953	0.45468	1.21421	0.6071
2018	**1. quarter**	61210421	9497321	0.453	0.2249	1.453	1.22493	0.7265	0.61246	1.33897	0.66948
	2. quarter	137234299	22553309	0.50927	0.7763	1.50927	1.77635	0.75464	0.88817	1.64281	0.82141
	3. quarter	229828385	46837124	0.50043	1.5626	1.50043	2.56255	0.75021	1.28128	2.03149	1.01574